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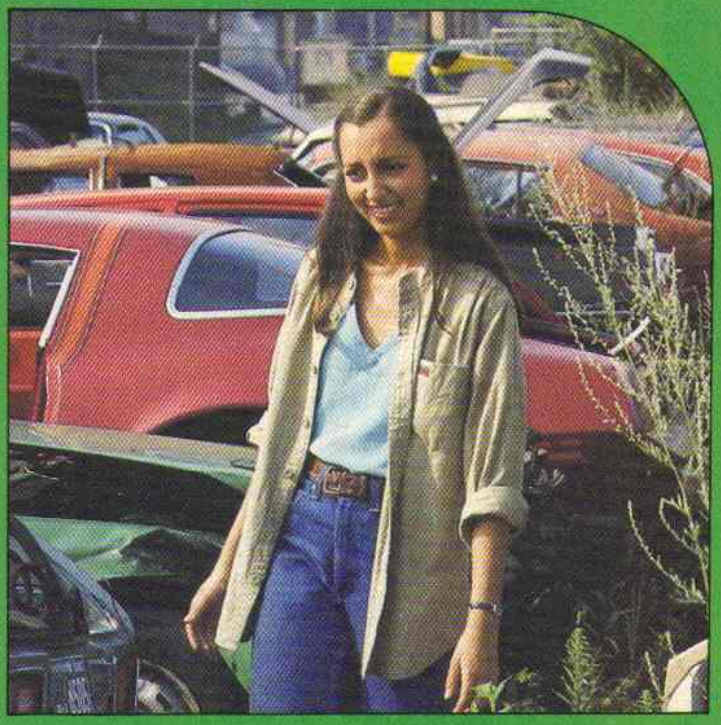
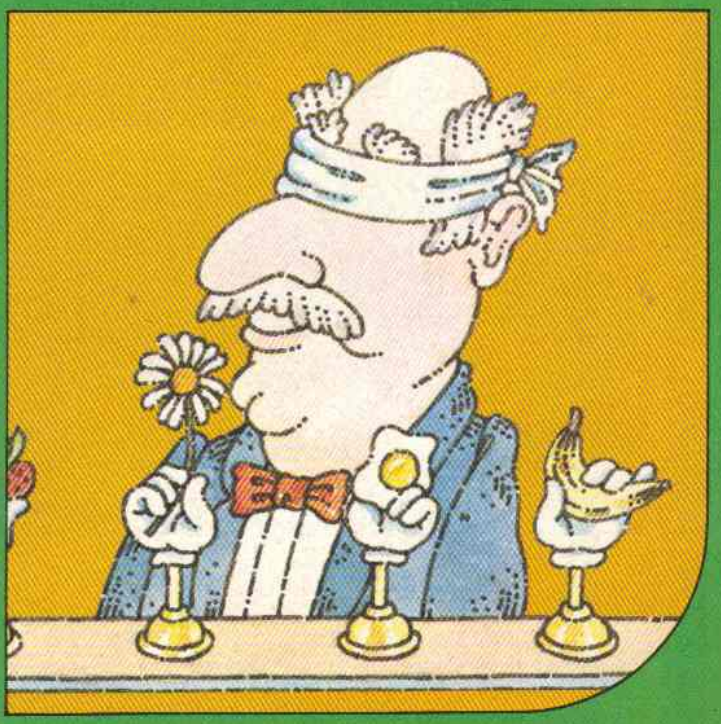
3-2-1 CONTACT™

Inside: Meet a High-Flying Balloonist



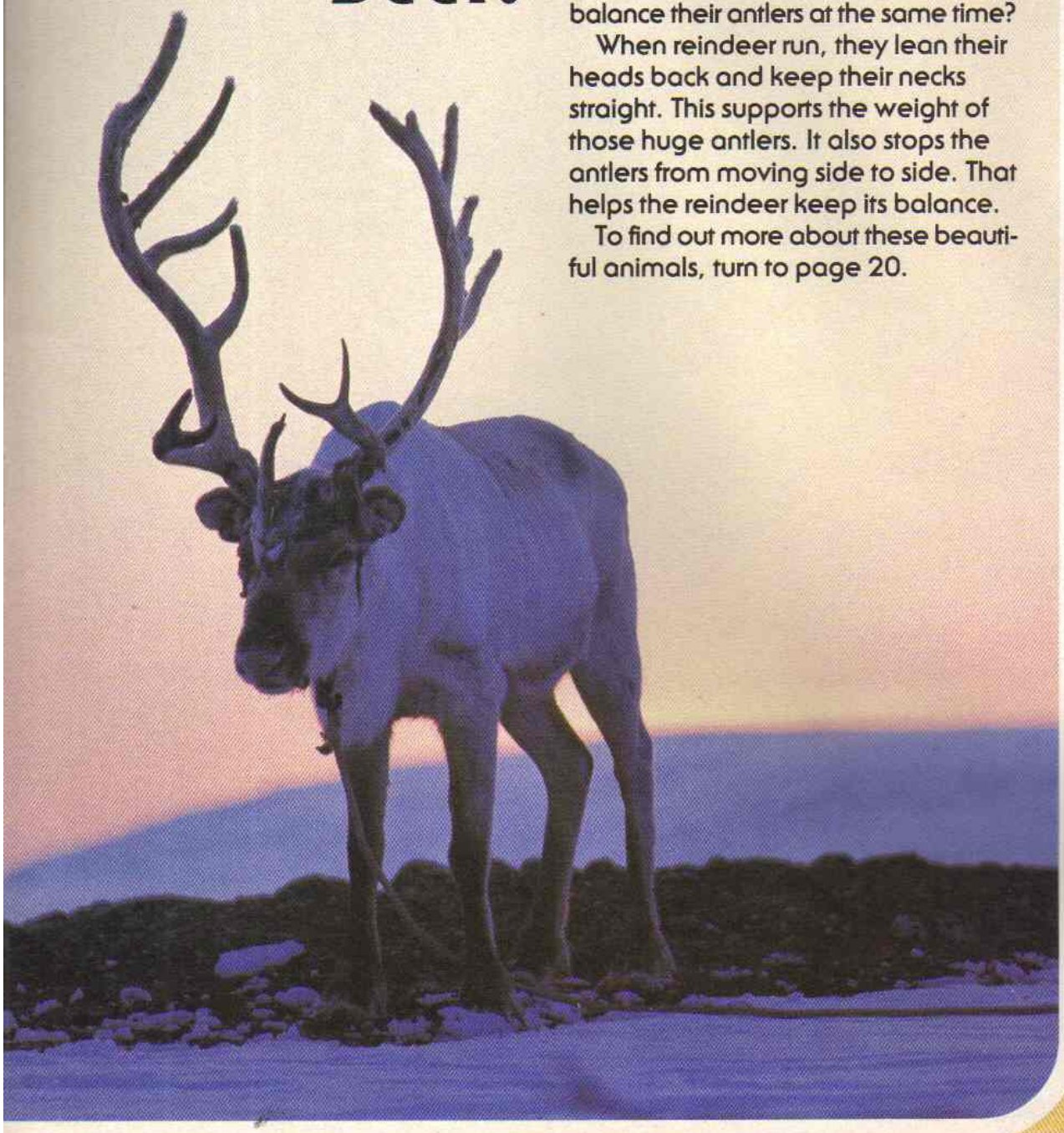


Oh Deer!

Can you imagine reindeer stumbling through the snow? Of course not. They're always so graceful. But reindeer like the one here carry a heavy load on their heads. How do they manage to run on slippery snow and balance their antlers at the same time?

When reindeer run, they lean their heads back and keep their necks straight. This supports the weight of those huge antlers. It also stops the antlers from moving side to side. That helps the reindeer keep its balance.

To find out more about these beautiful animals, turn to page 20.



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Standing on top of a hot air balloon, Annie performs a stunt called "balloon bobbing." She wears a special harness to make sure she won't fall off.

She Floats Through the Air with the Greatest of Ease

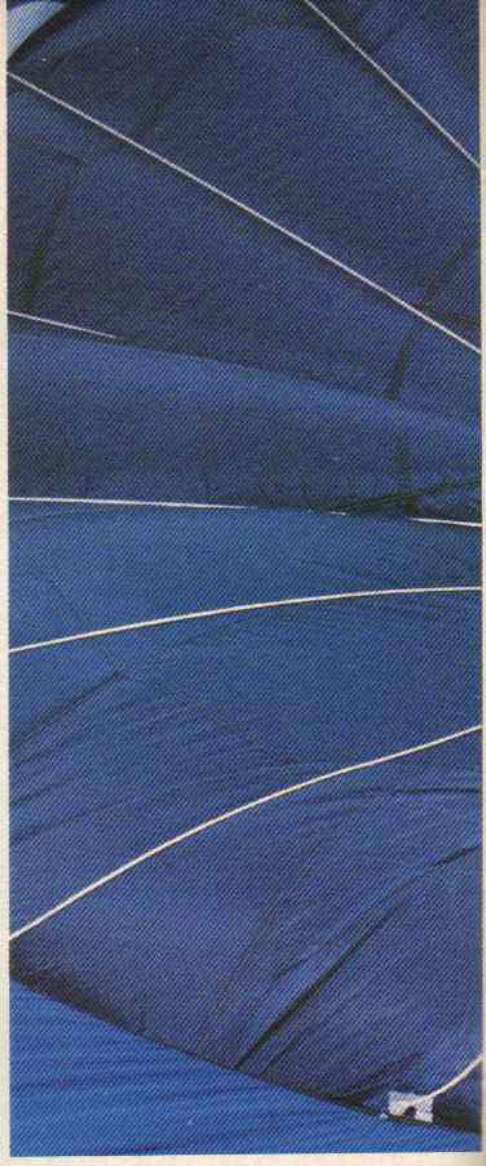
MEET A HIGH-FLYING BALLOONIST

by Linda Moore

When Annie Salzberg goes for a ride in a small airplane, she sometimes gets sick to her stomach. But that doesn't mean she spends all her time on the ground. It's just that she prefers to do her flying in a hot air balloon. "Flying in a balloon is smoother than riding in an elevator," she says. "Unless of course the basket you're in bumps a tree top. Then you sway back and forth until it settles down."

Annie ought to know. At the age of 13, she is one of the youngest hot air balloonists in the country. She serves as crew member for her mother, who is an experienced balloon pilot. Next year she will be old enough to get a student pilot's license. It ➤➤

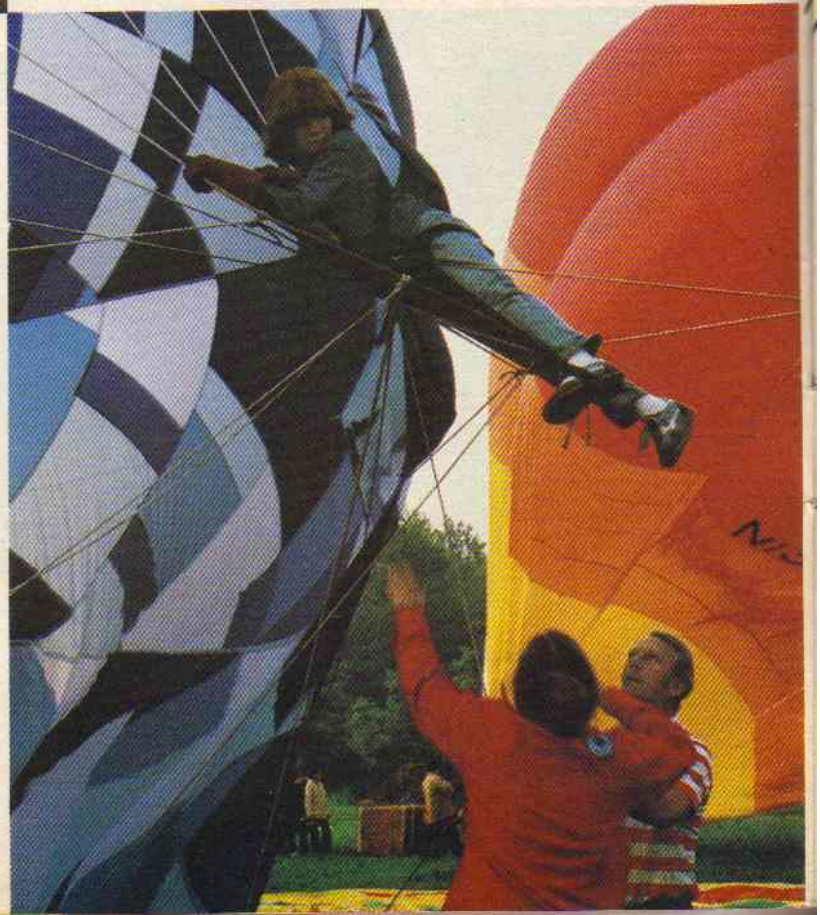
Left: Annie controls the flame in her mother's balloon. The fire heats the air which rises, lifting the balloon with it.



Right: Annie never feels that she is going to get hurt in her balloon—or on it. "My biggest worry," she says, "is that the balloon might get torn on a tree or fence."

Above: "Flying in a balloon is smoother than riding in an elevator," Annie says. "Unless your basket bumps a tree. Then you sway back and forth until it settles down."

Right: Annie comes down to earth after her stunt.



won't be too much longer after that until she'll be ready to fly a hot air balloon on her own.

Rise and Shine

When Annie goes ballooning, her day starts early. *Very* early. In order to fly a balloon, the air must be almost still. Since winds are calmest just before sunrise, she gets up at 5:30 in the morning. With her father, mother and older brother, she checks the ballooning equipment. The family also calls the weather department. They want to know what to expect while their balloon is flying.

Next the family drives to the launch site. Usually the balloon will take off from an open field near their home in West Hartford, Connecticut. Often other balloonists and their friends are there, too. There are usually plenty of people around to help get all the balloons up in the air.

The Salzbergs pull their balloon out of a large canvas bag. The balloon itself is made out of several pieces of light, sturdy nylon that are sewn together. They spread it out on the ground, making sure it is flat and even. Then they use a large fan to blow cold air into the balloon, until it is nearly full. At the same time, they use metal cables to connect the balloon to the basket.

The burner shoots a flame into the open hole at the bottom of the balloon. The flame isn't big enough to make the balloon catch fire. But it does heat the air around it. Since warm air is lighter than cool air, it rises to the top of the balloon. Then more cool air at the bottom heats up and rises. Soon the balloon is full of hot air. It floats above the basket, which is still on the ground. Now Annie's mother heats the air inside even more. It starts to rise, taking the basket with it. They're on their way!

Annie took her first balloon trip when she was nine years old. On that flight, she floated over farms and saw horses, cows and chickens. She loved getting a chance to see the world from this new point of view. "From up in a balloon, you can see deer hiding in the woods," says Annie. "When the light is right you can see all the way to the bottom of shallow ponds. You can even see the fish swimming around in them."

Danger!

Only trained pilots are allowed to fly hot air balloons. When the wind picks up, handling a balloon can be pretty tricky. Take landing a balloon on a windy day, for example.

A pilot must fly in low over the place where he wants to land. But he must be careful not to hit houses, trees and power lines. Then, at just the right instant, he pulls the *rip cord*. Some of the hot air is released from the balloon and the basket hits the ground. Then a slit in the side of the balloon is quickly opened to let the rest of the air out. If not, the wind might keep pulling the balloon. "Sometimes people get tossed out of the balloon on high wind landings," says Annie. "Then the balloon flies off without them. Usually, if you hang on tight, you'll be okay. I always wear a helmet, gloves and heavy clothes just to be safe."

What's Going On Up There?

Lately, Annie has learned to do an unusual new stunt called *balloon bobbing*. Before the balloon is blown up, she is strapped into a harness on top of a small wooden platform. As the balloon is blown up, it takes Annie with it—six stories high! Then she stands on top of the balloon, her hands free to wave to her audience. During this time, the balloon is tied down so that it won't float away.

The first time Annie tried balloon bobbing, she couldn't do it. The harness was made for someone much bigger and taller than Annie. She couldn't hang on. "I knew I was going to slip off the ➤➤

Balancing on top of a balloon is easy, says Annie. "It's like being on a big air bag."

board," she recalls. "The harness would catch me, but just hanging there I might damage the balloon. So I yelled for the crew to pull me down."

The next time Annie tried bobbing, the harness was set up specially for her, so that it would fit perfectly. But she was even more nervous this time. "There were a lot of reporters and TV people around," says Annie. "Actually, once I got up, riding on top of the balloon was like being on a big air bag . . . easy."

It seems like daredevil Annie has done everything a kid could possibly do from a balloon. *Almost* everything, she says. "There's one thing I always wanted to do, but haven't done yet," says Annie with a smile. "That's spit down a chimney!"

What Do You Know about Snow?

A CONTACT QUIZ

by Megan Stine & H. William Stine

Would you believe it if we told you it takes a little dirt to make it snow? It's true. Each tiny piece of snow—called a snow crystal—has an even tinier speck of dust or dirt in it.

Here's how it works. You know that snow is formed in clouds filled with water. To make snow, the water needs something to hang onto. That's where all the dust in the air comes into the picture. The water attaches itself to bits of dust. Then it freezes to form a crystal of snow.

It's not impossible to form snow without a speck of dust, but it's a lot harder. The temperature must be much colder—around –40°F (–40 C)!

As you can see there's a lot to know about snow. Here's a quiz full of the cold facts. But when you take it, beware. Some of the questions are a little flaky!

1. Snowflakes can be as large as dinner plates.
True or False?

2. If the temperature goes above freezing, it's too warm to snow.
True or False?

3. When a quart of snow melts, you get a quart of water.
True or False?

4. In some rare cases it is possible to see red or blue snow.
True or False?

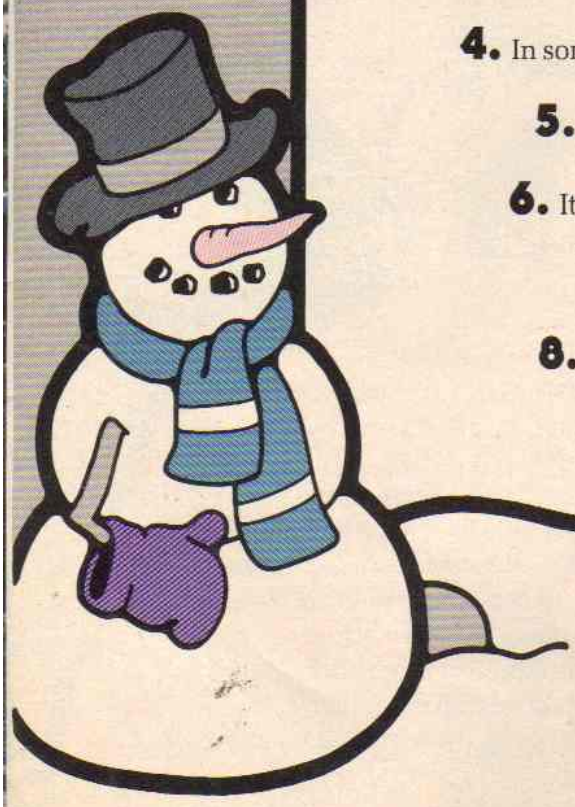
5. There are monkeys who can roll snowballs.
True or False?

6. It is possible to be temporarily blinded by snow.
True or False?

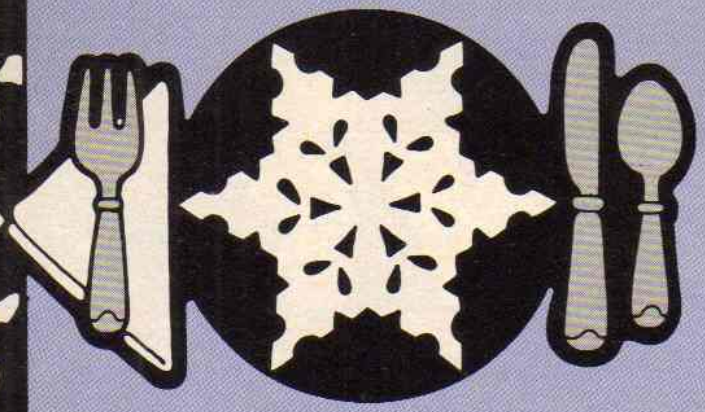
7. It never snows a lot in California.
True or False?

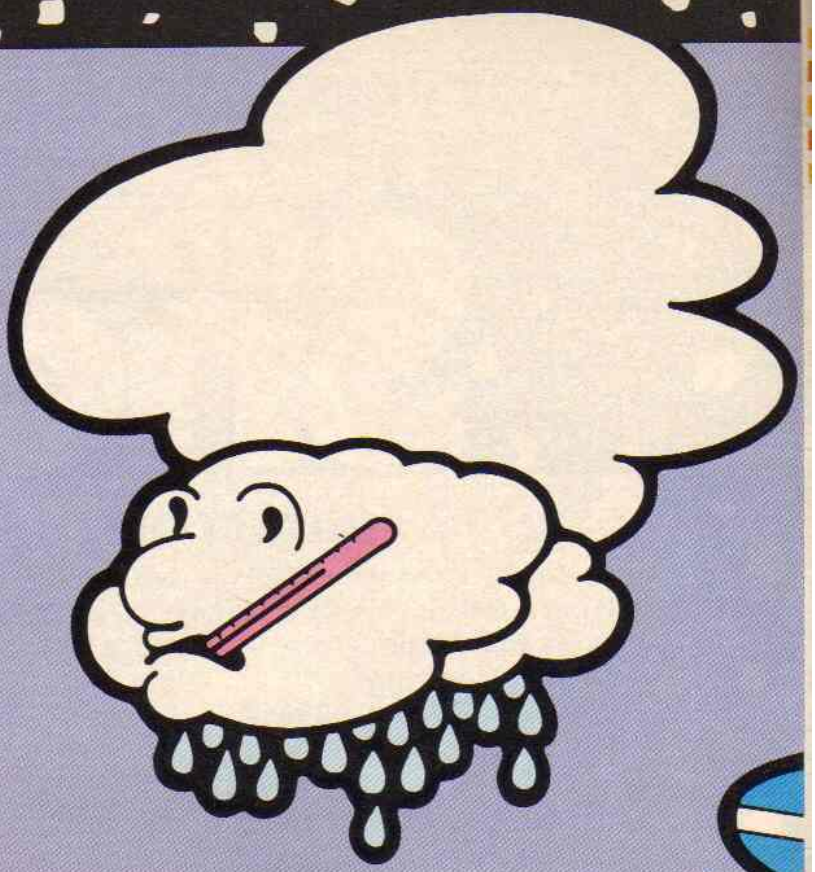
8. Some automobile fumes can make it snow.
True or False?

Answers on the next page.



Snow Quiz Answers





1 **False** Snow crystals start out too small to see. Then things happen to them on their way to the ground. The single crystals attach themselves to each other, making larger and larger flakes. Snowflakes the size of your hand have been seen. But dinner plates? S'no way.

2 **True** It has to be 32°F (0°C) or colder for snowflakes to form. Sometimes, on the way to the ground, snow will pass through areas of warm air. When this happens, snow turns into rain. If it goes back through freezing air, it turns into freezing rain or *sleet*. Got it?

3 **False** But don't take our word for it. Fill a bucket with some snow. Then bring it inside. When the snow melts, you'll see you're left with *a lot* less water. When water freezes, it takes up more space than when it is in liquid form. That plus the air between the flakes makes the difference.

4 **True** Yes! There is such a thing as red snow. And it's not just found in a cherry snow-cone. Snow is white as it falls to the ground. But in some places tiny plants, called *algae*, spread through the freshly fallen snow. There are so many of these plants, they color the snow. You can see pink or red snow in the Sierra Mountains, in the western part of the United States. You can see blue snow in Europe. In other places, algae turn the snow yellow or green.

5 **True** At least one special group of monkeys found out how much fun it is to make snowballs. These monkeys had been brought to Oregon to be studied by scientists. One monkey dropped a ball of snow and it rolled. So he pushed it some more until he had a huge snowball—big enough to sit on! After that it was monkey see, monkey do, with all the other monkeys making snowballs and sitting on them.

6 **True** On a long ski trip, it's smart to carry suntan lotion and sunglasses. The lotion keeps you from getting sunburned. But the glasses aren't just so you'll look cool. They're to help prevent snow blindness. White snow reflects the rays of the sun. If you stare at the bright, white snow for a very long time on a sunny day, you could go snow blind. Your eyes get burned by the reflection of the sun. But this "sunburn of your eyes" isn't permanent. Snow blindness usually lasts only a few days.

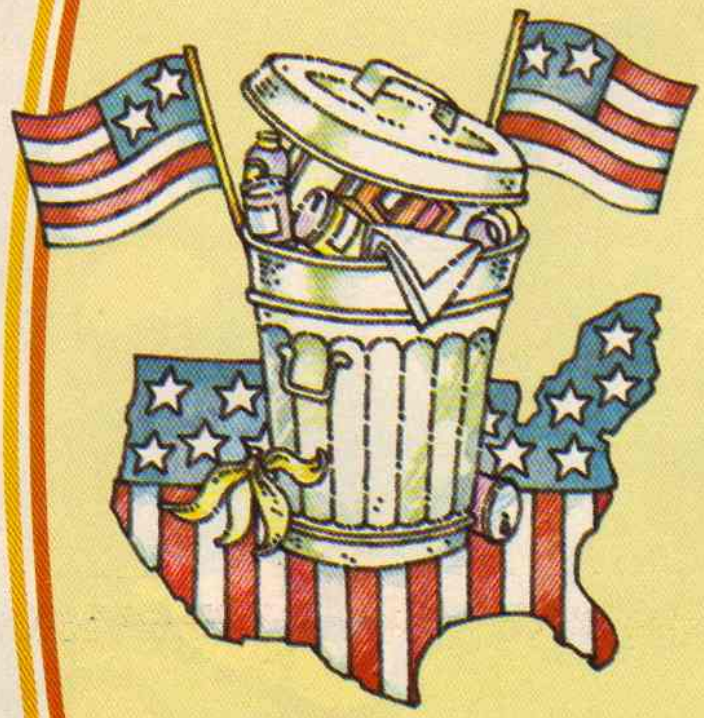
7 **False** Surprise! It does snow a lot in the northern part of California. Don't forget—California is a big state. Part of it has mountains that are covered with snow. In fact, Tahoe, California, holds a world's snowfall record. Once, in only four days, it snowed nine feet (2.7 m). So if you're going to Los Angeles, California, take your surfboard. But if you're going to Tahoe, take your skis!

8 **True** Auto exhaust fumes shoot lead dust into the air. Some of the dust gets into clouds and becomes the center of snow crystals. And *sometimes* these crystals do become falling snow.

Other times, though, there's too much lead dust in the clouds. The dust keeps making crystals. The result? The ice crystals get packed into the clouds too tightly. This *prevents* rain and snow. Weather experts think that lead fumes are bad for the weather because they interfere with the natural rain and snow cycles. That's one reason why unleaded gasoline is better for the environment.

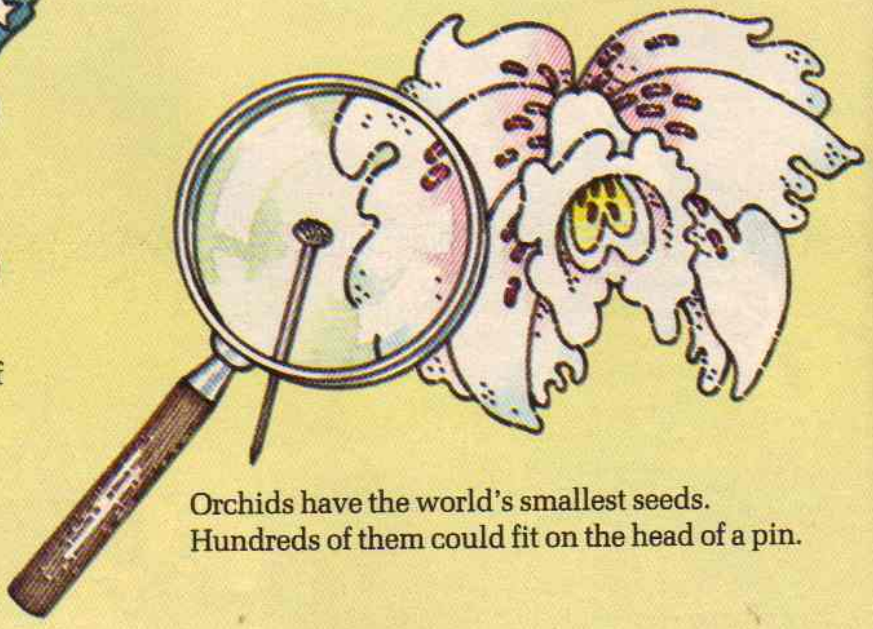
Factoids

What are factoids? They are weird little facts that are stranger than strange, truer than true. Use them to wow your friends, amaze your family and dazzle your teachers.

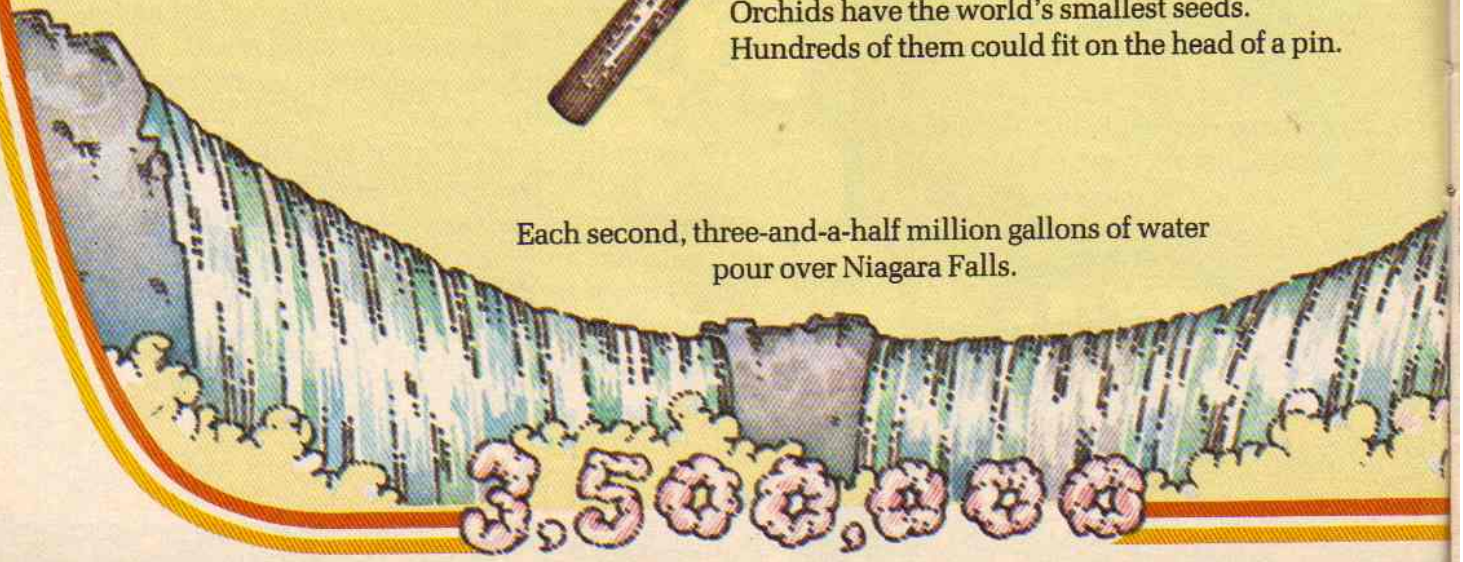


Americans throw away about a half billion tons of garbage each day.

A bloodhound can pick up a scent as much as five days old and follow it for 50 miles.

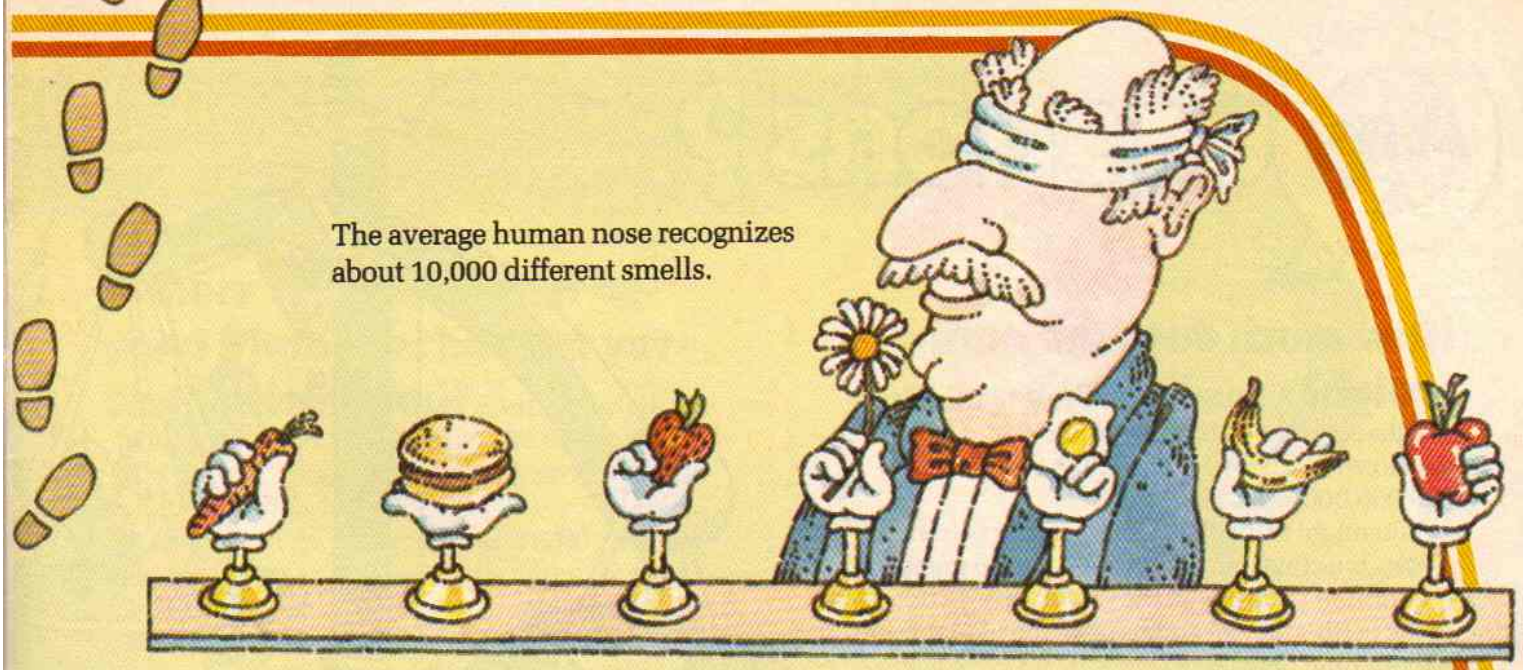


Orchids have the world's smallest seeds. Hundreds of them could fit on the head of a pin.

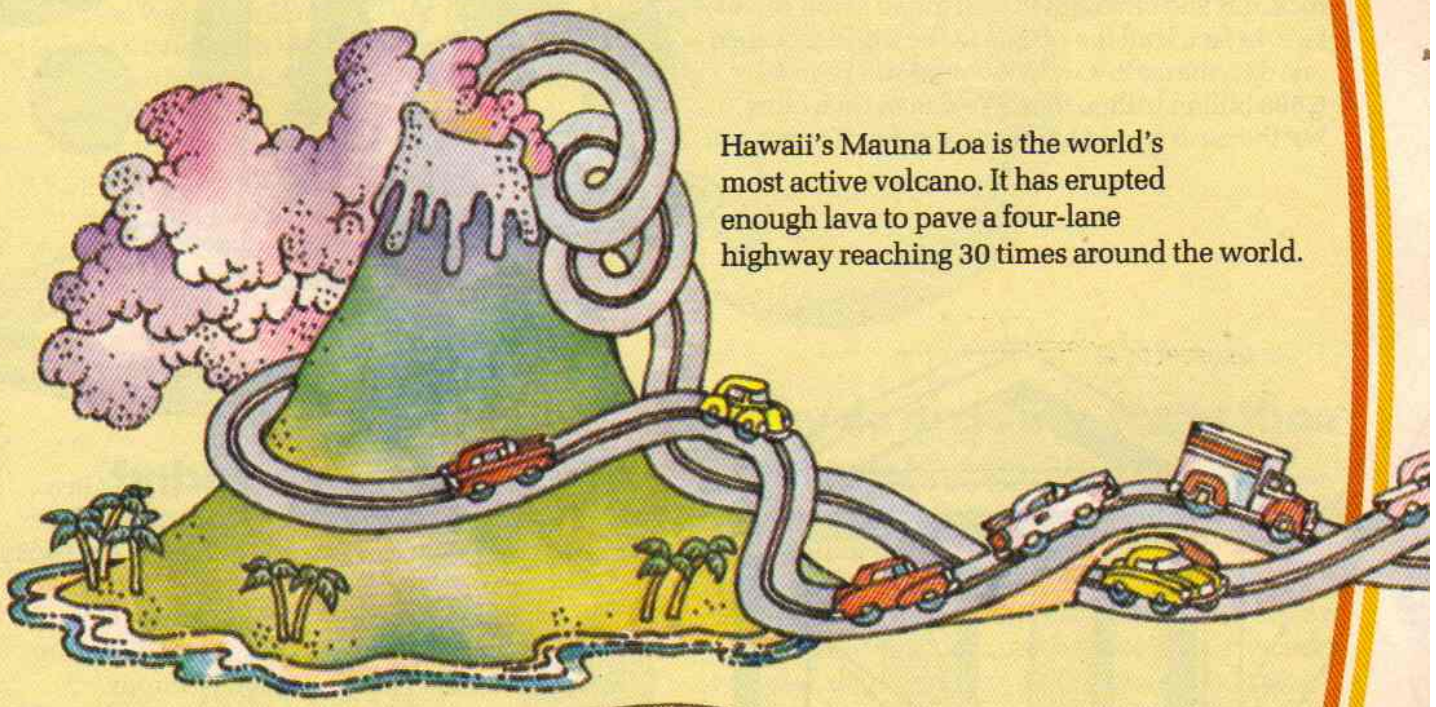


Each second, three-and-a-half million gallons of water pour over Niagara Falls.

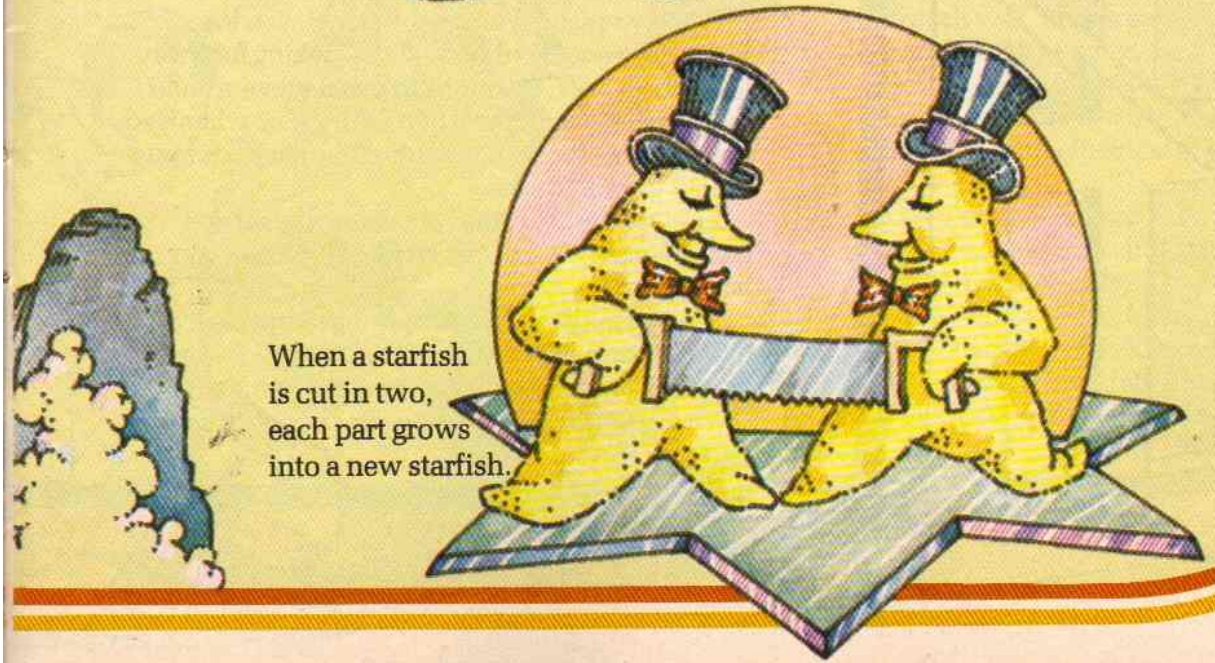
The average human nose recognizes about 10,000 different smells.



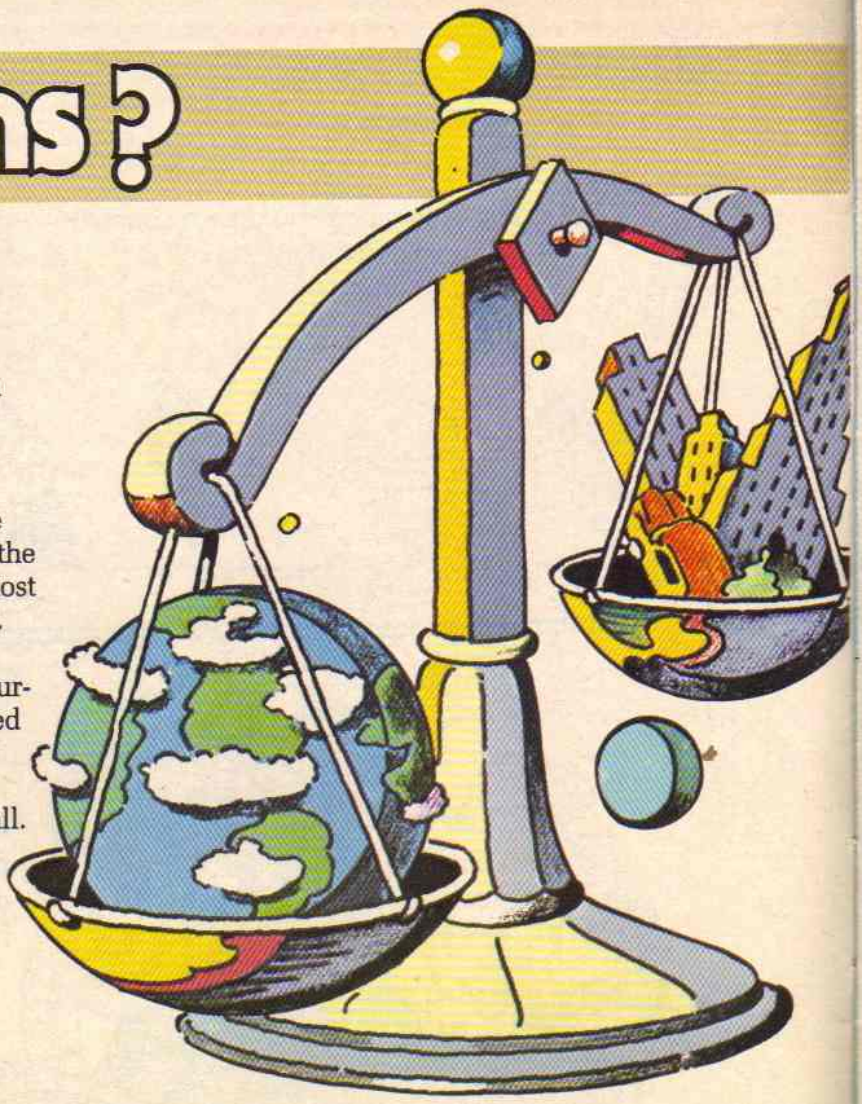
Hawaii's Mauna Loa is the world's most active volcano. It has erupted enough lava to pave a four-lane highway reaching 30 times around the world.



When a starfish is cut in two, each part grows into a new starfish.



Any Questions?



How much does the earth weigh?

A lot! Scientists figure that the earth weighs about 6.588 billion trillion tons. Another way to write that would be 6,588,000,000,000,000,000,000, tons. Heavy!

You might think that a lot of weight is from the trucks, buildings, and elephants—not to mention the four billion people—in the world. But it's not. Most of the earth's weight comes from the planet itself. Ninety-nine percent of the earth's weight is the rock, dirt and other heavy stuff found *below* the surface. In fact, if all the people in the world vanished one day, the earth's weight would *still* be nearly 6.588 billion trillion tons. We'd miss each other, but the earth would hardly notice the change at all.

What is static electricity?

On a cold, dry day, you walk across the carpeted floor. You touch the doorknob and ZAP! Static electricity strikes again!

Everything, including you, is made up of tiny invisible particles called *atoms*. And every atom has even smaller particles called *electrons*.

When your shoes touch the carpet, you lose some electrons. Your body starts looking for a way to get them back. Electrons in metal move around more freely than in most other things. So when you reach for the doorknob, some of the electrons jump from it to your fingers.

As electrons leap, they crash into the air and give off energy. You see a spark of light and you hear a crackle.

Sound familiar? The same thing happens in a thunderstorm when a flash of lightning is followed by a crash of thunder. That's static electricity, too.

Question sent in by Nealie, Dee Dee and Elizabeth Pidcock, Athens, OH.

Do you have a question that no one seems able to answer? Why not ask us? Send your question, along with your name, address, and age, to:

Any Questions?
3-2-1 CONTACT
P.O. Box 599
Ridgefield, NJ 07657

Is there another planet beyond Pluto that has not yet been discovered?

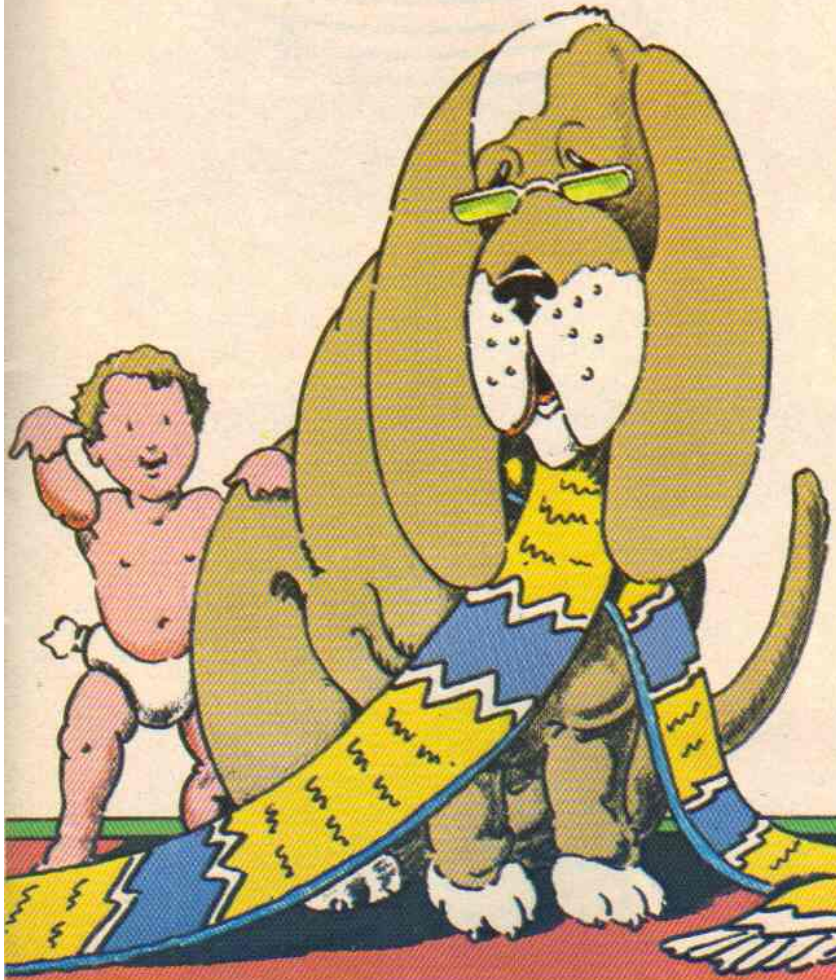
Pluto, the ninth planet discovered, was first seen 50 years ago. Since then, astronomers have searched for Planet X. But no one has found it yet.

A few years ago, scientist Joseph Brady thought he knew where a planet might be found. Brady studied the records of Halley's Comet, which passes Earth every 76 years. He noticed that each time it came, the comet arrived four minutes early or four minutes late. Perhaps this change was caused by the pull of a planet deep in outer space?

Using a computer, Brady figured out where this planet would have to be. But when astronomers looked for it, their telescopes found nothing.

That doesn't mean that there are no more planets anywhere in our solar system. It would take a lot of looking to find anything that deep in space. In the meantime, scientists are continuing the search.

Question sent in by Erica Kerner, Armonk, NY.



Why do dogs age faster than humans?

You may feel like a kid when you are 10 years old. But at that age, your dog is already an old-timer.

People and dogs have different *life spans*. Most people live between 70 and 80 years. Dogs average between 10 and 12 years. Because their lives are shorter, dogs pack a lot more growing and aging into each year. In one year, a dog ages about seven times as much as you do.

Scientists are not sure what causes people and dogs to age. Like growing, it probably has something to do with chemical changes in an animal's body.

Every kind of animal has a different life span. One of the shortest living animals is the mayfly. It usually lives half a day. On the other end is that all-time old-timer, the tortoise. These sea turtles have been known to live as long as 152 years. No wonder they're never in much of a hurry!

Question sent in by Tamiko Jackson, New Haven, CT.

Experiment

Build an Electroscope

In this month's *Any Questions?*, you found out what causes static electricity. Now that you know the answer, you can build a machine that shows you when static electricity is around. For best results, try this experiment on a cool, dry day. If there is a lot of moisture in the air, your electroscope won't work.

What You Need

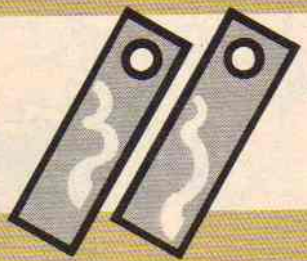
Glass jar with lid (Make sure the jar is clean and dry.)
Piece of copper wire about six inches long
Strip of thin aluminum foil (You can use the foil that chewing gum comes in. But first, *carefully* remove the paper on the back.)
A plastic or rubber comb
A wool scarf or sweater
Scissors

Getting Ready

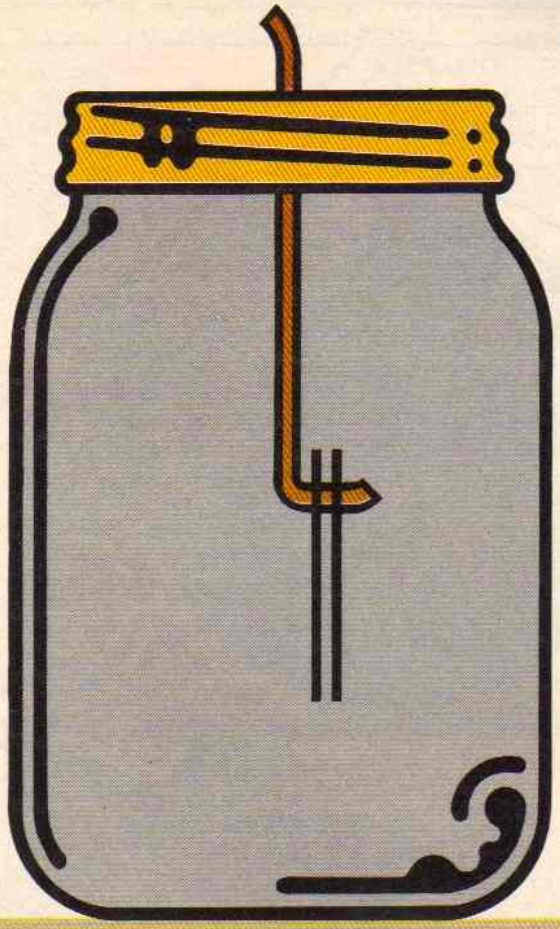
1 Punch a hole in the lid. (You might want to *carefully* bang a nail through to start the hole.)

2 Bend one end of the wire into a hook. Stick the other end through the hole in the lid.

3 Cut out two strips of foil one inch long and a half inch wide. Hang them loosely on the hook.



4 Screw the lid onto the jar. Now you're ready to test for static electricity.



Using Your Electroscope

Rub the comb over and over with a piece of wool for about a minute. Gently touch the comb to the end of the wire. The static electricity should make the pieces of foil on the other end move apart.

To reset your electroscope, touch the wire with your finger. If they haven't done so already, the pieces of foil should move back together.

Here's a tip that will make your electroscope work better if you aren't having any luck with your comb. Hang a copper paper clip from your hook. Now hang the foil loosely from the clip and try again.

After you get your comb to work, try rubbing other things with wool—a pencil, an iron nail, a plastic ruler or anything else you can find. See which ones make the pieces of foil move. (Don't forget to touch the wire to reset your electroscope after each try.)

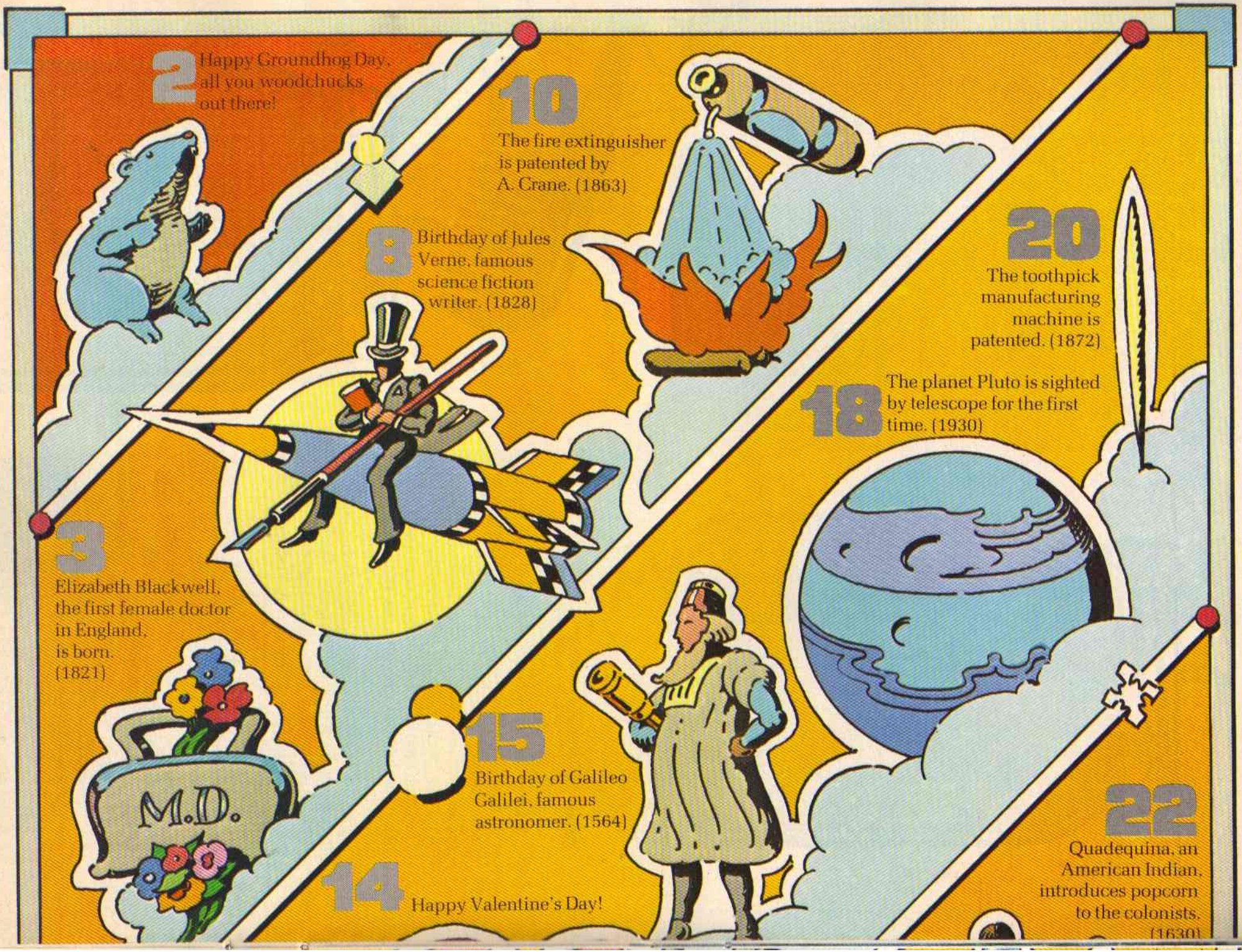
Why It Works

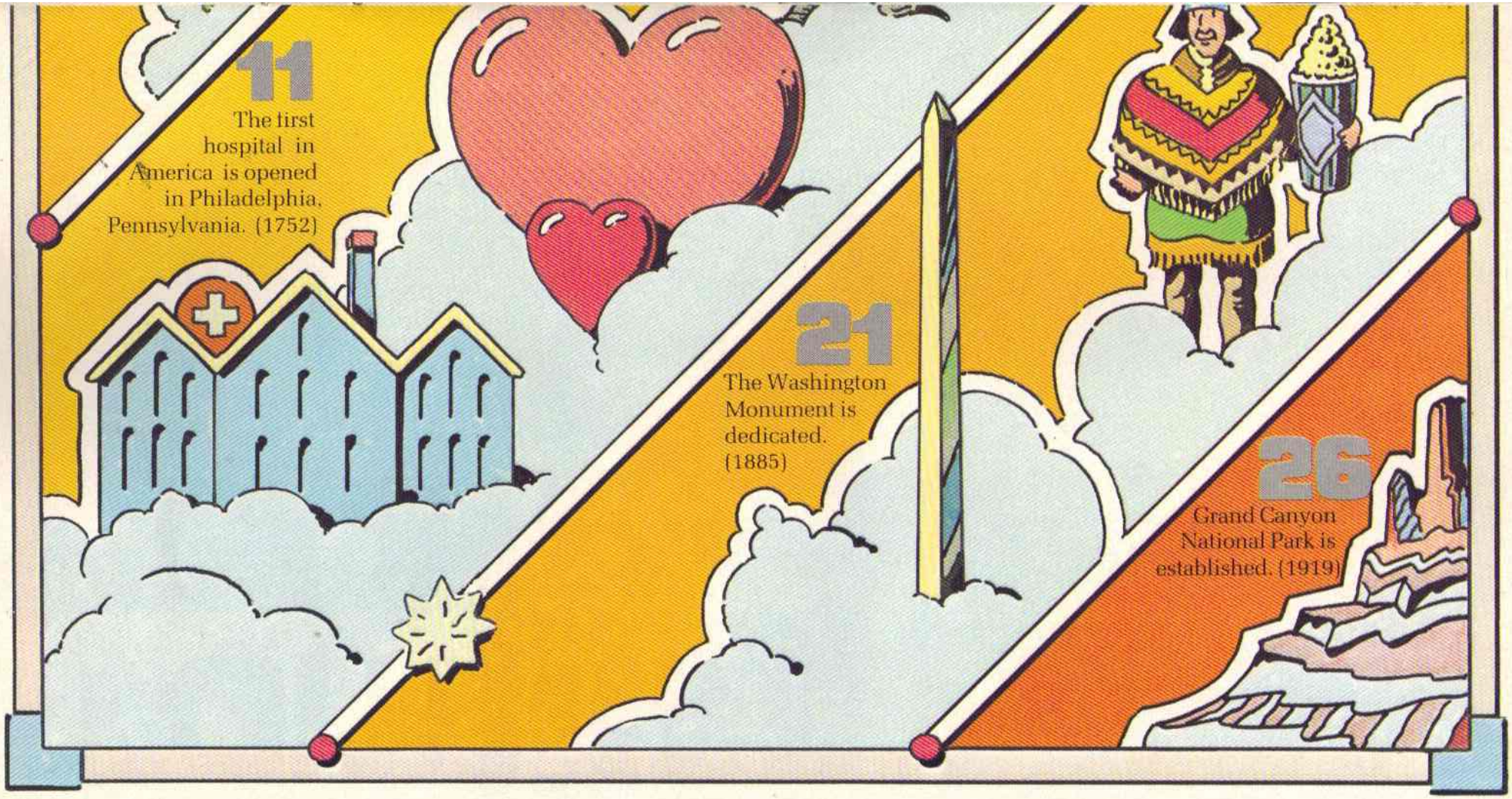
If you read this month's *Any Questions?*, you know that static electricity is caused by electrons. These tiny particles can build up in one object and then flow to another.

Rubbing the comb with wool causes many of the wool's electrons to jump onto the comb. The comb then becomes charged because it has more electrons than it needs. When you touch the wire with the charged comb, those electrons escape. They jump off the comb and flow down the wire onto the pieces of foil. With all those extra electrons, the foil becomes charged, too. That's why its ends spread apart.

If you've ever played with magnets, you'll better understand why the pieces of foil move apart. Remember that opposite poles of a magnet attract one another, while like poles repel. A similar thing happens with your two pieces of foil. The two ends of the foil are given the same charge by the electrons. So they push away from one another.

DANIEL PELAVIN 1989


2
Happy Groundhog Day, all you woodchucks out there!
10
The fire extinguisher is patented by A. Crane. (1863)
8
Birthday of Jules Verne, famous science fiction writer. (1828)
20
The toothpick manufacturing machine is patented. (1872)
18
The planet Pluto is sighted by telescope for the first time. (1930)
3
Elizabeth Blackwell, the first female doctor in England, is born. (1821)
M.D.
15
Birthday of Galileo Galilei, famous astronomer. (1564)
14
Happy Valentine's Day!
22
Quadequina, an American Indian, introduces popcorn to the colonists. (1630)



Earth Days

February

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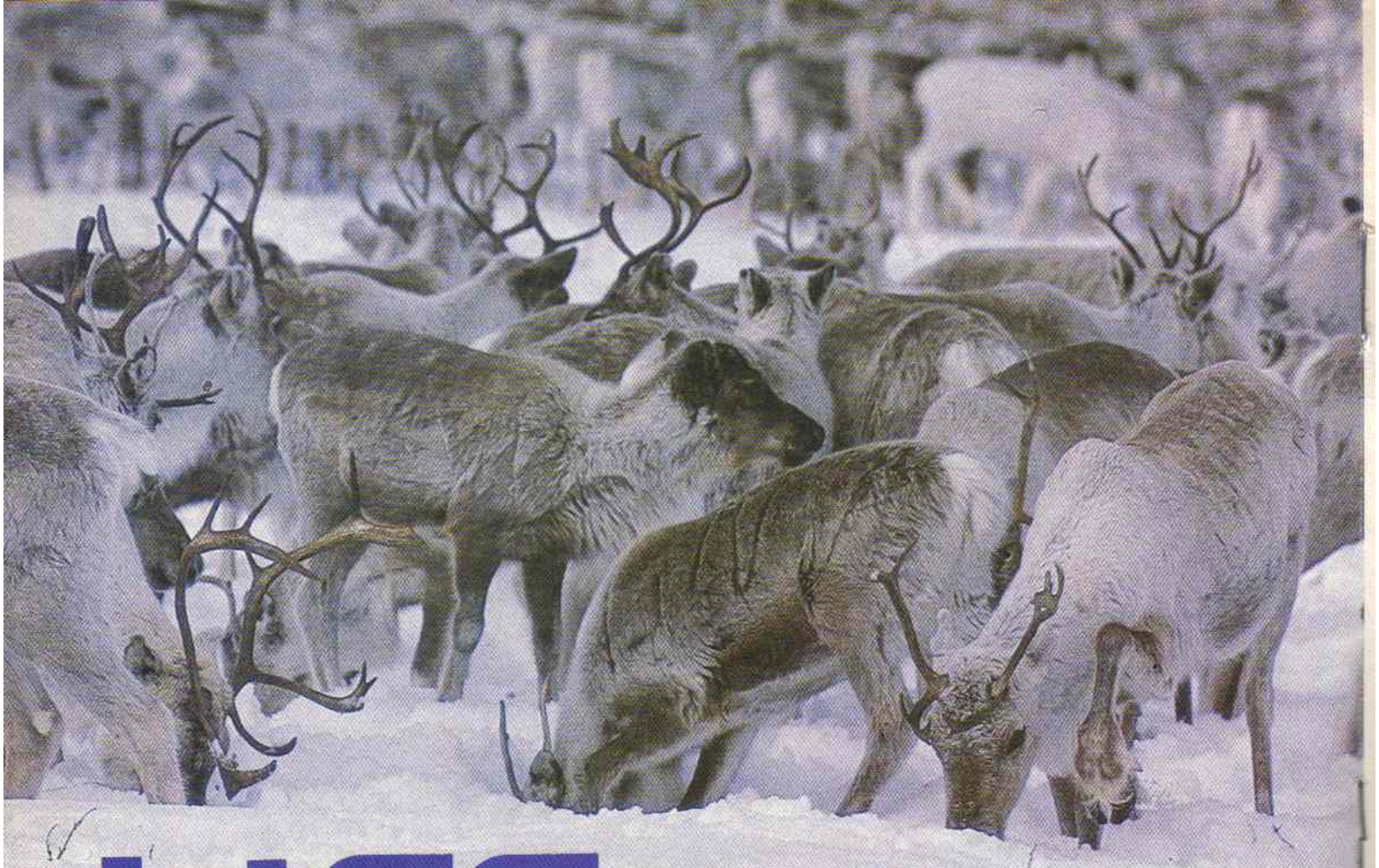


In winter, reindeer scrape snow from the ground to uncover food. They eat tiny plants, called lichens, which grow in cold, icy ground.

LIFE AT THE TOP

A LOOK AT REAL REINDEER

by Phillip Fragasso

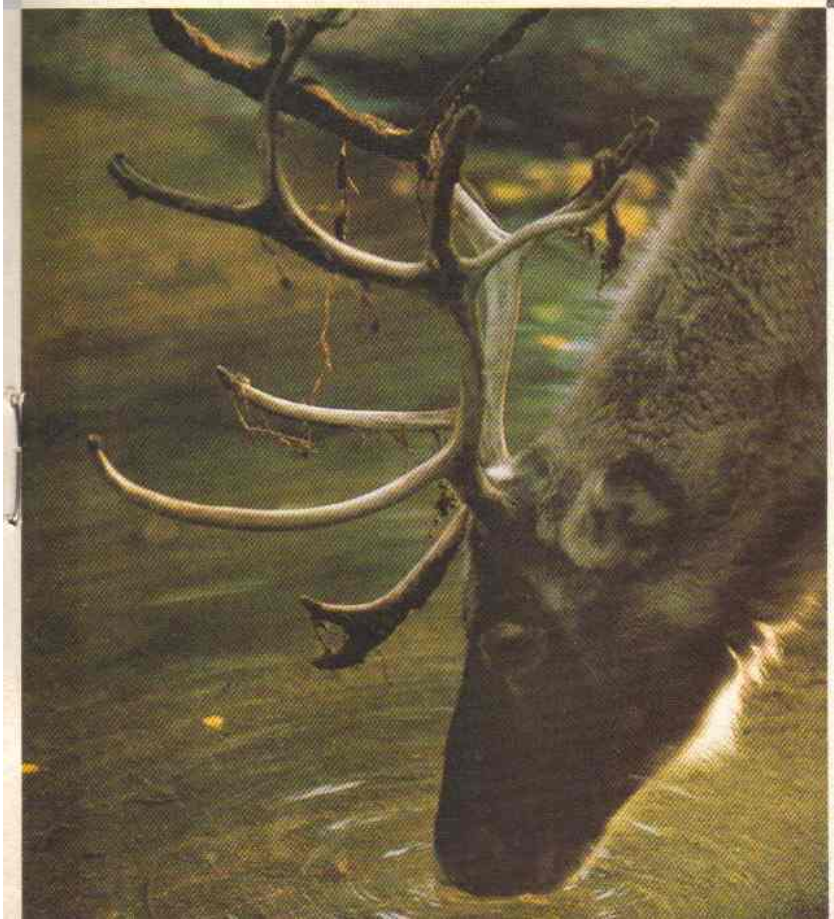
If someone asked you who Dasher and Dancer and Prancer and Blitzen were, you would know right away. They are fairy tale names for a real-life animal—the reindeer. But what if someone wanted to know more about real-life reindeer. Would you know what to say?

Real reindeer don't have red noses. They can't fly as in the Christmas story. But they do live near the North Pole and sometimes pull sleighs. And that's just a little bit of what there is to know about these beautiful, powerful animals.

Reindeer are found in the cold, snowy parts of the world—places like Norway and Finland in Europe, and Russia's freezing Siberia. In North America, they live in Alaska and Canada. Some can even be seen as far south as Montana and Maine.

Left: The reindeer of Europe and Asia are smaller than the North American caribou. They are about 3½ feet (1.2 m) high and weigh about 300 pounds (140 kg).

Below: Reindeer are not always peaceful. They fight by knocking their heads together and locking antlers.



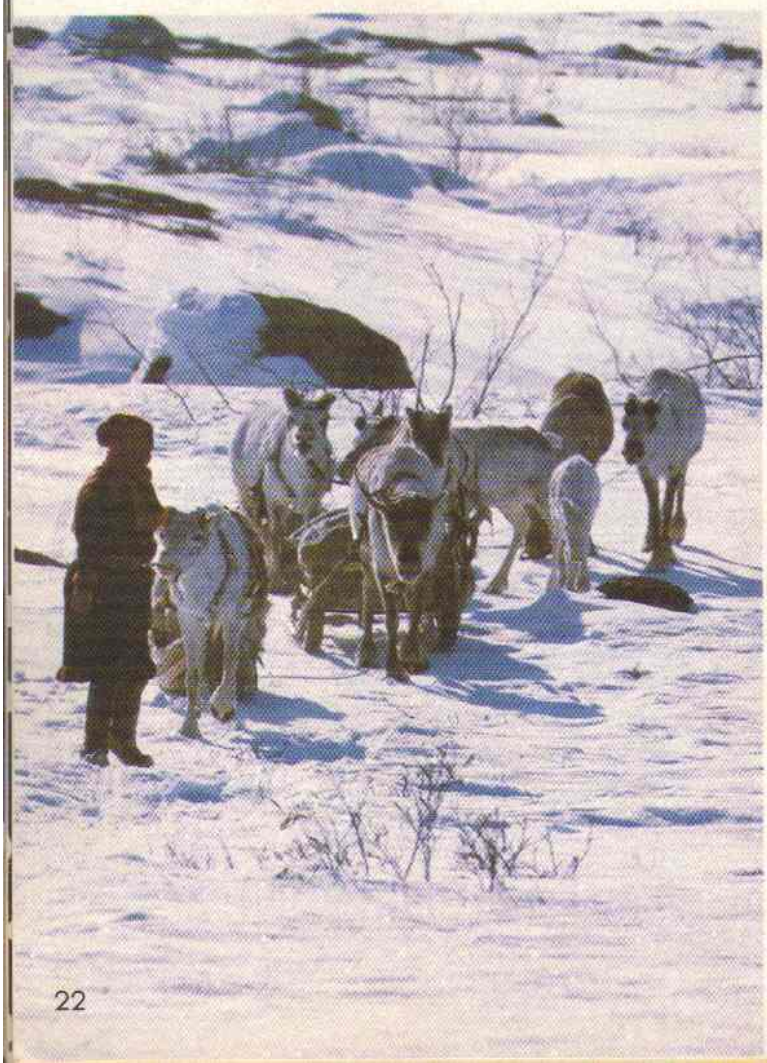
The North American reindeer is called the *caribou* (KAR-uh-boo). It is the largest of all reindeer. Some caribou grow to be five feet (1.5 m) high and weigh 400 pounds (182 kg). Caribou and other reindeer live in groups in the wild. A herd may have as few as 30 or as many as 200,000 reindeer. They spend most of their time traveling together, usually searching for food.

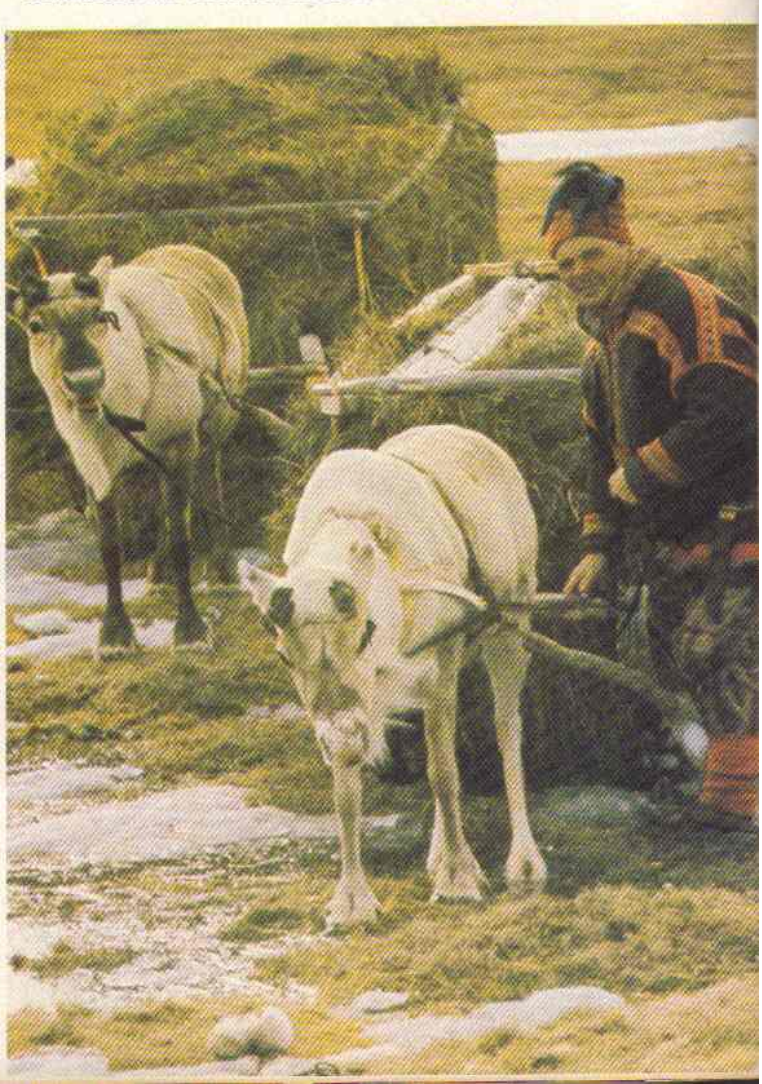
Reindeer don't hunt other animals. Instead they eat mushrooms, grasses, twigs and moss. In summer they find this food in grassy flat areas in the north. When fall and winter come, food is harder to find. ➤➤

Left: A reindeer's antlers are covered with fur and can be over three feet (1 m) wide. They shed their old antlers each January and grow a new set during summer.

Below: Reindeer keep warm even in temperatures that fall far below zero. Their hooves are made to help them walk easily on snow.

Above: Herds of reindeer travel thousands of miles each year. After winter in the forest, they travel north to spend summers on treeless meadows in the Arctic.





Above: In some Arctic areas reindeer are the best means of getting around. They can pull sleds at speeds up to 15 miles per hour (24 km/hr).
Left: Reindeer do important work helping people in northern countries. This strong animal can pull loads of up to 300 pounds (140 kg) for hours.

Rein deer migrate south to forests where food is not quite so scarce. In the springtime they return to the grassy plains.

Even though they live in freezing cold places, reindeer are able to stay warm. Covering their skin are two separate layers of hair. The bottom layer is a thick wooly coat of hair. The top layer is made of long, stiff hairs. These hairs are hollow and filled with air. They hold onto the heat from the reindeer's body. Thanks to this double protection, these animals stay toasty warm, even when the temperature is minus 50°F (–46°C).

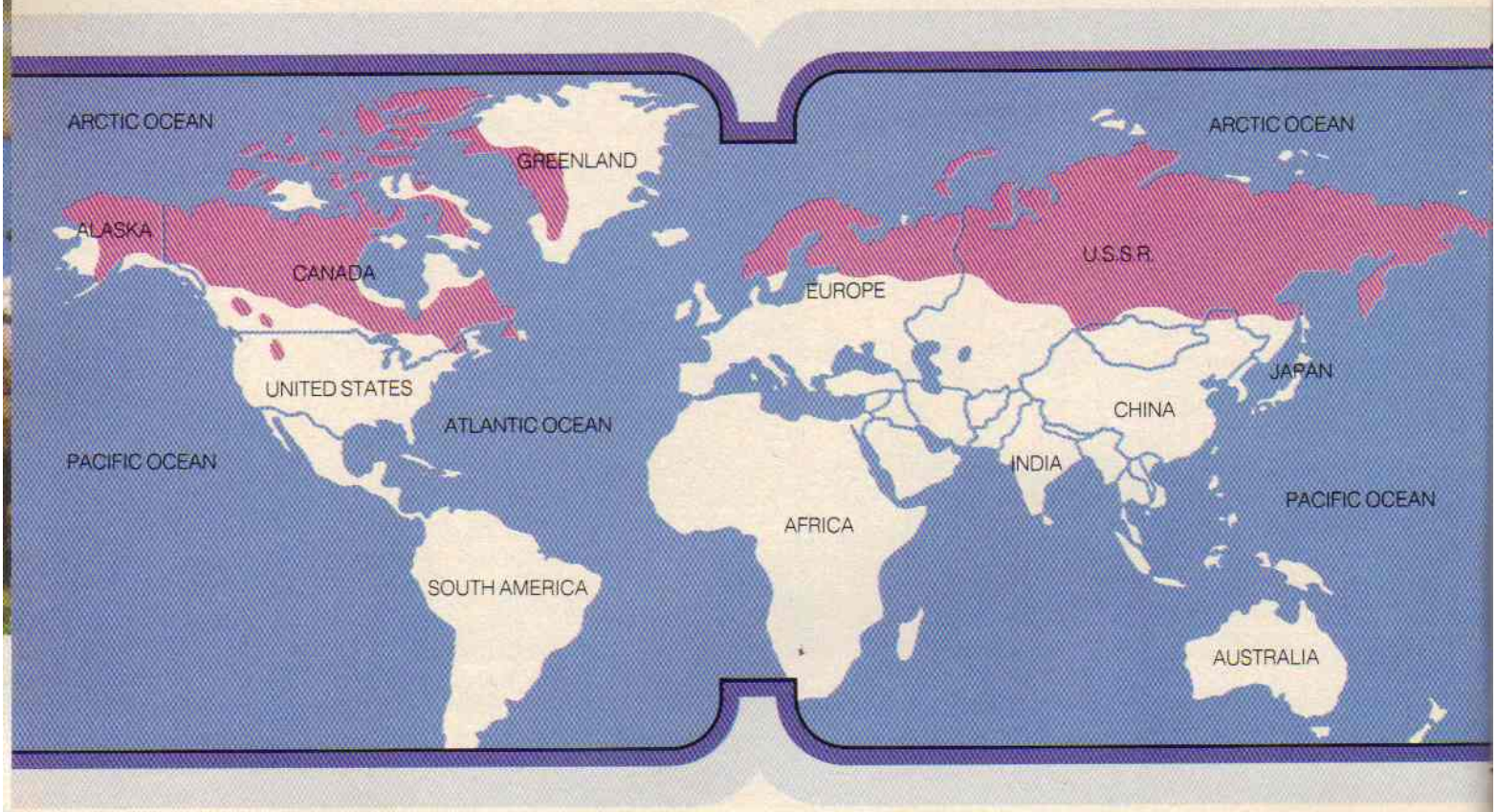
Growing New Antlers

If you are ever lucky enough to see a reindeer, the first things you will notice are its antlers. In every other kind of deer, only the males have antlers. But every reindeer, male or female, has them. Not only that. Reindeer grow a new set of bony antlers each year.

In the summer when they are a year or two old, reindeer grow their first small, soft antlers. They are attached to the animal's skull. In the fall, blood stops circulating to the antlers and they get harder Around Christmas-time, the antlers drop off. This probably doesn't hurt the reindeer at all. During spring and summer the animal grows a new set of antlers. They are a little bigger and stronger than the year before. Then the cycle starts all over.

No Slipping or Sliding

Even though they carry those heavy antlers, reindeer move very well over rocky, icy land. Thanks to their specially made hooves, they get through all kinds of rough spots. The hooves have hard, sharp, thin edges. These edges help reindeer avoid slipping on dangerous cliffs. They also let them speed over slippery ice. The middle part of



Above: The red areas on the map show the places where reindeer are usually found. In North America they are sometimes seen as far south as Montana and Maine.

the hoof is very soft. It is covered with fur, which makes it work like a snowshoe.

You wouldn't think these big animals could travel across water easily. But they can. When reindeer are on the move, they often have to swim across streams and rivers. That's when their hooves go to work. Each hoof spreads out like a paddle. That helps the reindeer swim across. At the same time, the air-filled hair on the reindeer's body acts like a life preserver and helps it float. Together, the hooves and the hairs make the reindeer an excellent swimmer.

Danger Warning!

Reindeer's worst enemies are wolves. To protect themselves, the reindeer herds have a natural warning system. Whenever a reindeer feels danger ahead, it points its tail straight up. The underside of the tail is white. When a member of the herd sees a white tail, it knows that means "danger ahead." Each reindeer then passes along the message by lifting up its tail, too.

Reindeer also can leave messages behind them, so others who come later can be warned. The reindeer squirts a strong-smelling liquid from between its toes onto the ground. Any reindeer that comes along will smell the liquid and know there may be danger nearby.

A Reindeer for a Pet?

Not all reindeer live in the wild. In Norway, Finland and Siberia, people raise herds of reindeer. These reindeer pull sleds. They also give milk, like cows do. Reindeer milk is very thick, though, and has to be watered down before people can drink it.

People who depend on reindeer tell many true stories about them. In Norway, one real-life reindeer is a national hero. Many years ago, urgent messages had to be sent to Norway's king. An army officer jumped into his reindeer-pulled sleigh and set off. They traveled across 800 miles (1333 km), through snow and wind. After two days, the reindeer got the soldier and his message to the king. The reindeer had saved the day!

Pocket Zoo

Flying Animals

This month's animals come from all over the world. They also come in all shapes and sizes. What they have in common is that they spend much of their time soaring through the air.

Actually, only some of them fly. Others—the flying fish, flying dragon and flying lemur—are really *gliding* animals. They have folds of skin which they spread to form special "wings." These wings help the animals float on wind currents. This makes it easier for them to travel and hunt for food.

How to Make Your Pocket Zoo

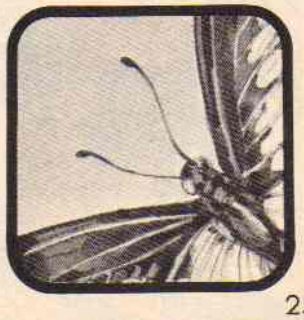
To make your animal cards, you need scissors, 4"x6" index cards (or pieces of cardboard the same size) and some sticky stuff.

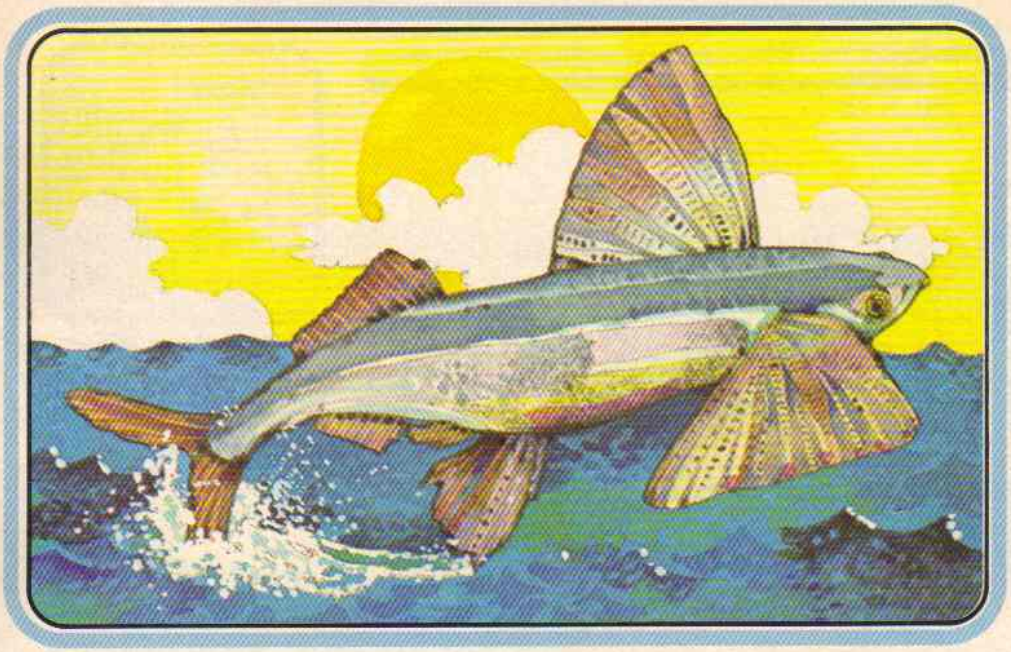
1. Cut out your six animal cards along the dotted lines.

2. Paste or tape the animal to one side of the index card. Do this so that the information about the animal *hangs over the side.* (picture below)

3. Now fold the flap with the information so that it is on the back of the card. Glue this side, too.

4. Use the extra space on the back for anything else you might want to write about each animal. Your pocket zoo is ready.





California Flying Fish

Category: *Fish*

Size: Up to 18 inches (46 cm) long.

Weight: About 1 pound (.5 kg).

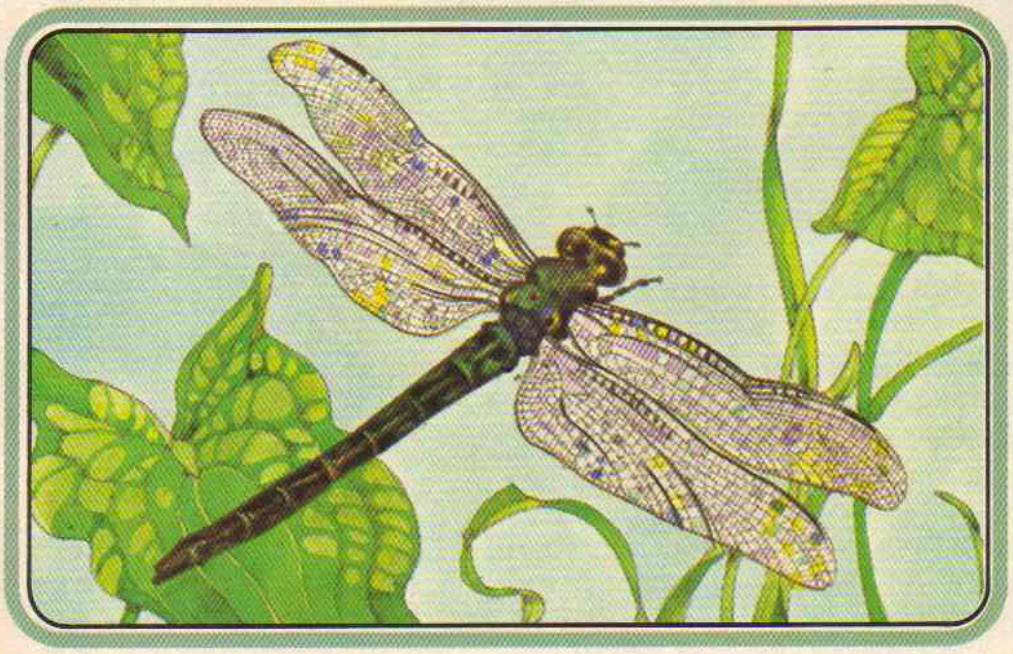
Length of Life: Unknown.

Home: Warm water in the Pacific Ocean.

Food: Tiny sea plants and animals.

Fact: The flying fish glides out of the water to escape bigger fish trying to eat it. One glide can last for over 30 seconds. During that time, the fish travels 150 to 1,000 feet (50-333 m).

Scientific Name: *Cypselurus californicus*



Dragonfly

Category: *Insect*

Size: About 3 inches (7.5 cm) across its wings.

Weight: About 1/15 ounce (2 g).

Length of Life: 2 to 3 years.

Home: Ponds and lakes.

Food: When young, it eats tiny fish and tadpoles. As an adult, it eats mosquitoes, flies and other small insects.

Fact: For most of its life the dragonfly lives underwater and is known as a *nymph*. Only in the last few months of its life does it sprout wings and take to the air.

Scientific Name: *Anisoptera* order

Flying Lemur (LEE-mer)

Category: *Small mammal*

Size: 25 inches (65 cm), including its tail.

Weight: 3½ pounds (1.5 kg).

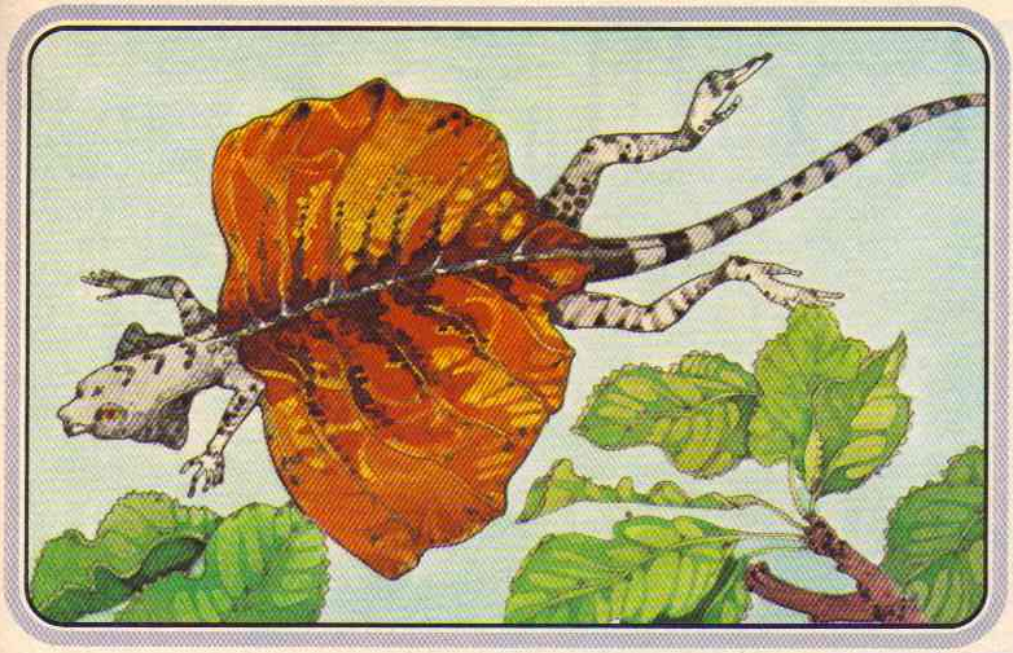
Length of Life: Unknown.

Home: Rain forests in southeast Asia.

Food: Flowers, fruits and leaves.

Fact: The flying lemur can glide as far as 100 yards (91 m) from tree to tree. The skin that forms its "wings" connects its neck, legs and tail.

Scientific Name: *Dermoptera* order



Flying Dragon

Category: *Reptile*

Size: About 8 inches (20 cm) long.

Weight: About 4 ounces (113 g).

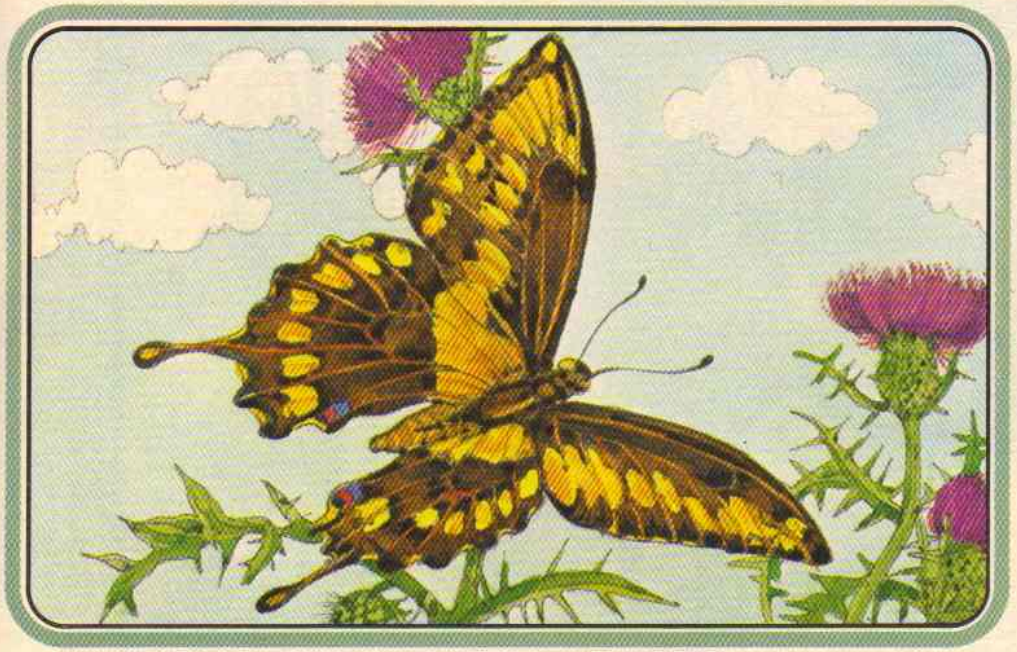
Length of Life: 3 to 5 years or more.

Home: Trees in southeast Asia.

Food: Insects and other small animals.

Fact: The male has bright folds of skin which are usually orange with black markings. During the mating season, he spreads the colored folds of skin to attract the females.

Scientific Name: *Agamidae* family



Giant Swallowtail Butterfly

Category: *Insect*

Size: 5 inches (12 cm) across.

Weight: 1/10 ounce (.3 g).

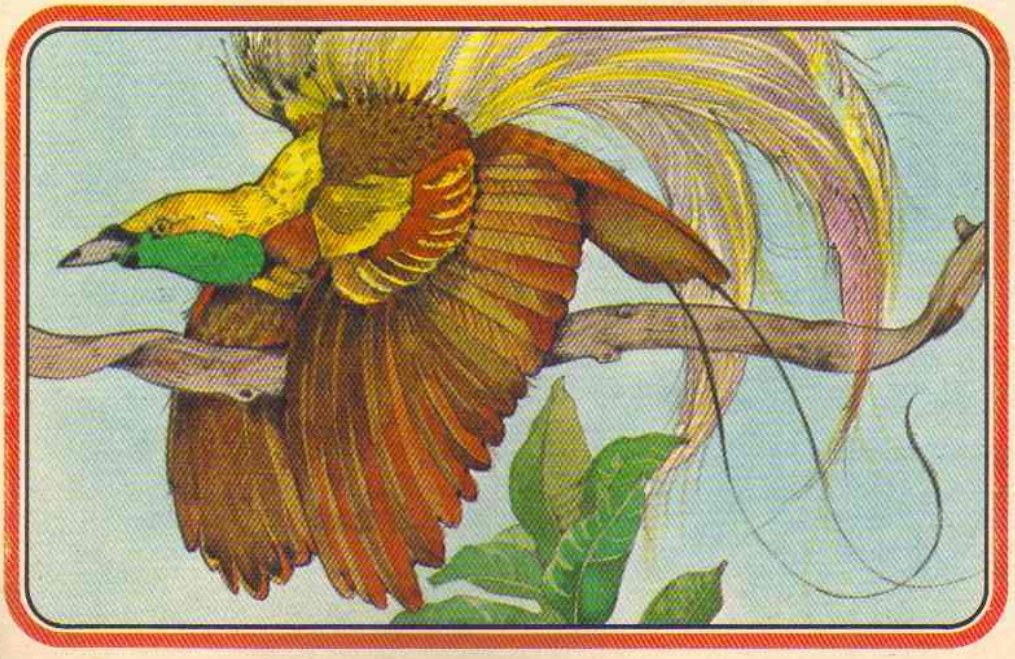
Length of Life: About one month as a caterpillar and one month as a butterfly.

Home: Trees in North America.

Food: As a full-grown butterfly it drinks flower nectar. When it is a caterpillar, it eats fruits and plants.

Fact: To protect itself, the swallowtail caterpillar gives off a bad-smelling odor.

Scientific Name: *Papilio cresphintes*



Great Bird of Paradise

Category: *Bird*

Size: 18 inches (46 cm) long.

Weight: Up to ½ pound (.25 kg).

Length of Life: 20 years or more in captivity.

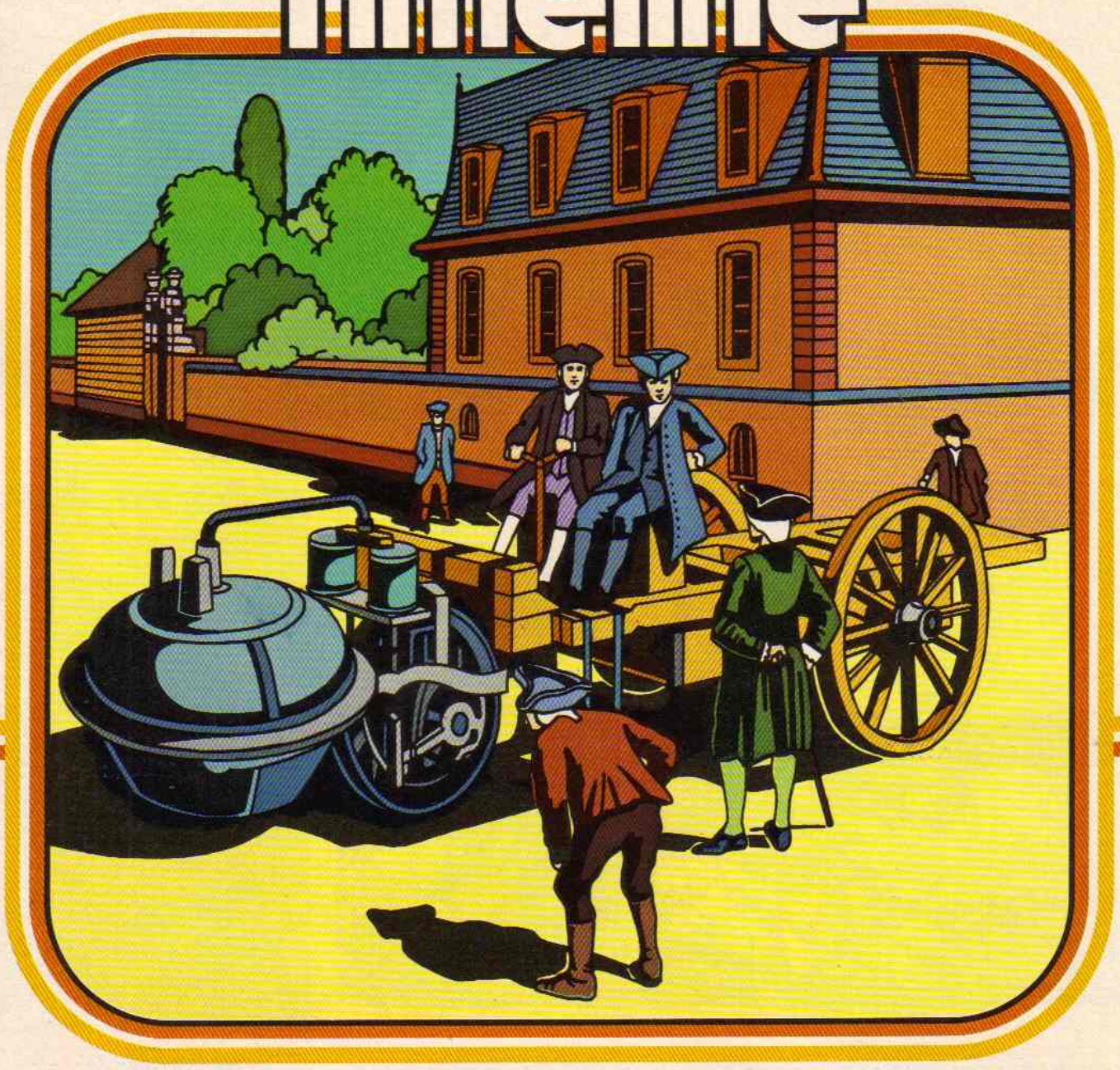
Home: Forests in New Guinea and islands near Australia.

Food: Insects and fruit.

Fact: The male uses its beautiful feathers to attract females. A group of males gathers in a treetop. After calling to the females, they hang upside down, spreading their feathers.

Scientific Name: *Paradisea apoda*

Timeline



In 1769 Nicholas Cugnot built his steam-powered tractor.

The History of Cars

by Nicholas Sullivan

Past

The first car was built in 1769 by a Frenchman named Nicholas Cugnot. His funny-looking contraption was powered by a steam engine. It had three wheels and looked like a tractor. The second time Nicholas tried it out, he crashed into his house. That was the world's first automobile accident!

Over the next 100 years, many different inventors made experimental cars. Some cars used steam engines, as trains did. Others worked on electrical power from batteries. Unfortunately, none of these cars could travel very far or go very fast.

The first gasoline car was built in the 1880s. Its engine worked much the way car engines do today. Gasoline was mixed with air. When a spark was added to this mixture, a tiny explosion took place inside the engine. The explosion pushed a metal rod down. The rod turned a crank under the car. That crank turned the wheels—and away the car went!

At first, all cars were very expensive. Each one had to be built separately, one piece at a time. But engineer Henry Ford had a better idea. He made all his cars out of parts that were exactly alike. They could then be put together by a group of people working on an *assembly line*. Soon you could buy a car for much less money. By 1927, 10 million Americans owned one of these "Model T" Ford cars.

Present

People in 1769 thought Cugnot's invention was a crazy idea. But today there are 200 million cars in the world. Thirty million new ones are built every year.

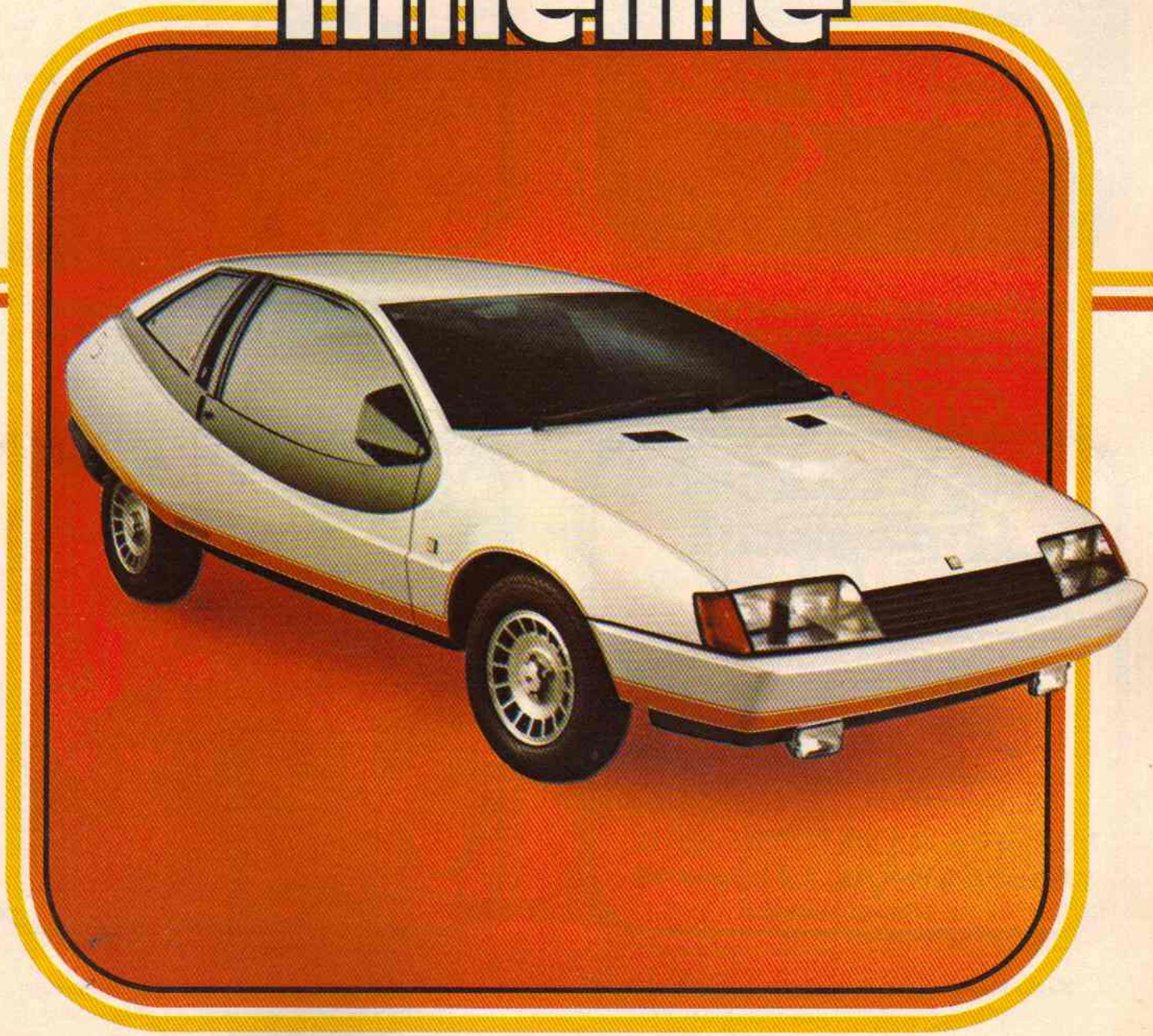
Today's cars, though, are not as fast or as fancy as the cars made 15 years ago. Those cars were built when gasoline was cheap. The world oil crisis that began in 1973 changed all that. Now people are interested in cars that go farther on less gas. To make these *fuel-efficient* cars, manufacturers are changing the way their new automobiles look.

Most new cars today are smaller. Their engines are smaller, too, and less powerful. New cars also use light-weight materials like plastic and aluminum where old cars used iron and steel. It takes less energy to move a lighter car. This helps save gasoline.

The shape of cars is also changing. Experts have found that box-like cars have a harder time moving against the wind than smaller, sleeker cars. Some think that the best shape for a car is a teardrop. With very small and sharp front ends, cars will have the fewest wind problems and will save the most gas.

And once again, scientists are experimenting with electric, battery-powered cars. Maybe this time they can invent one that will not have to run so slowly and be recharged so often. One thing is certain: cars will keep changing over the next few years.

Timeline



Today manufacturers are designing smaller, more fuel-efficient cars.

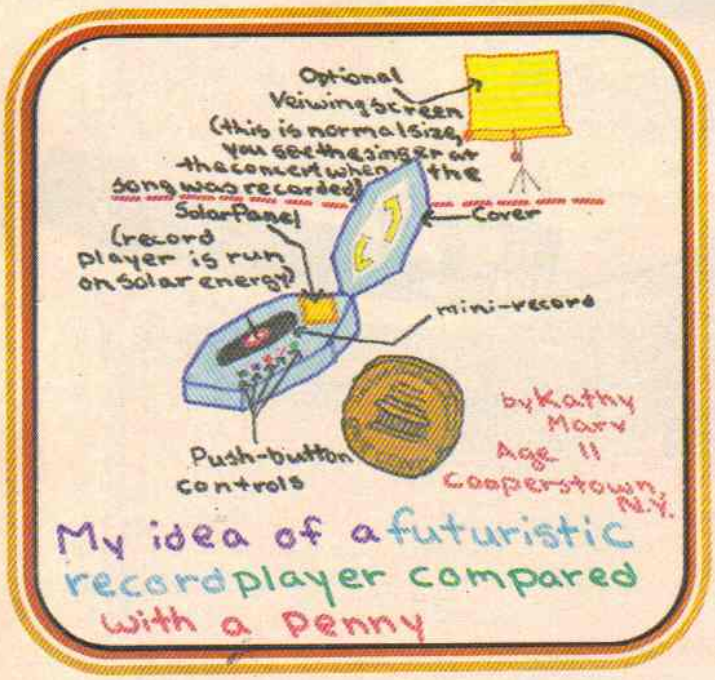
MAIL

Future Record Players We'd like to thank everyone for sending all those wonderful drawings to Timeline. Here are some of our favorites:

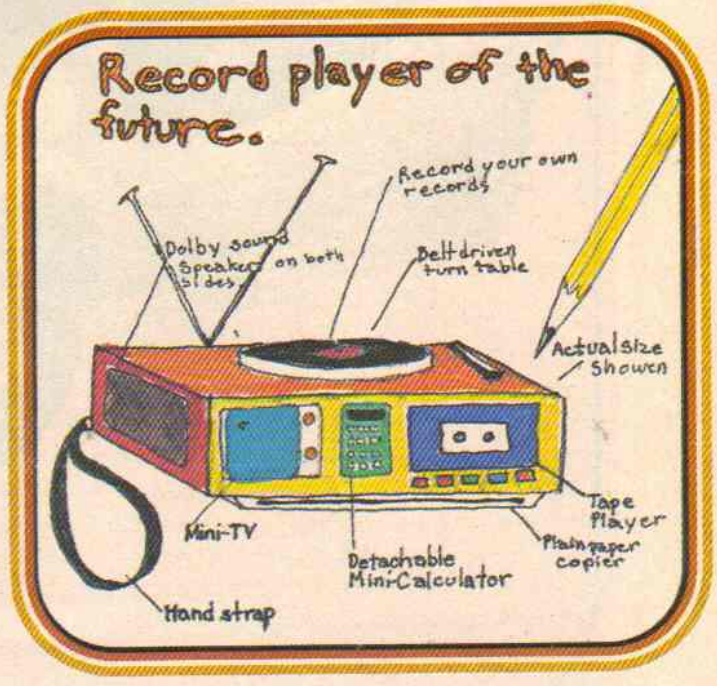
We also liked the future record players sent in by: Andrew Diamond, Lexington, KY; David Goodman, Wenonah, NJ; Mike Lyall, Phoenix, AZ; M. Betz,

Lesley Foster, New Cumberland, West Virginia. You can learn all the latest dance steps from Lesley's record player.

Lisa Wadsworth, age 10, Nahant, Massachusetts. The "Super Sonic Record Player" forms a robot image of whomever is singing on your record.

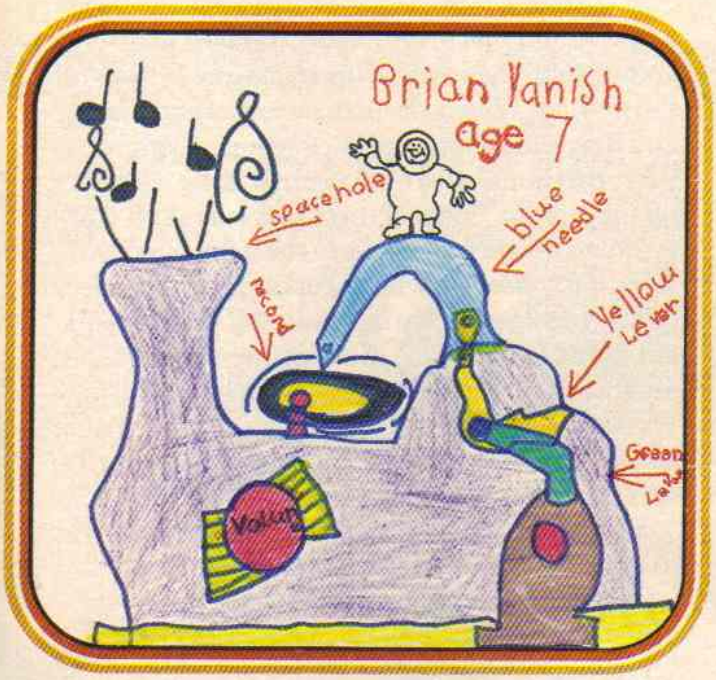


Kathy Marx, age 11, Cooperstown, New York. Kathy's "futuristic record player" is the size of a penny. It comes with a screen so you can see the singers as they perform.



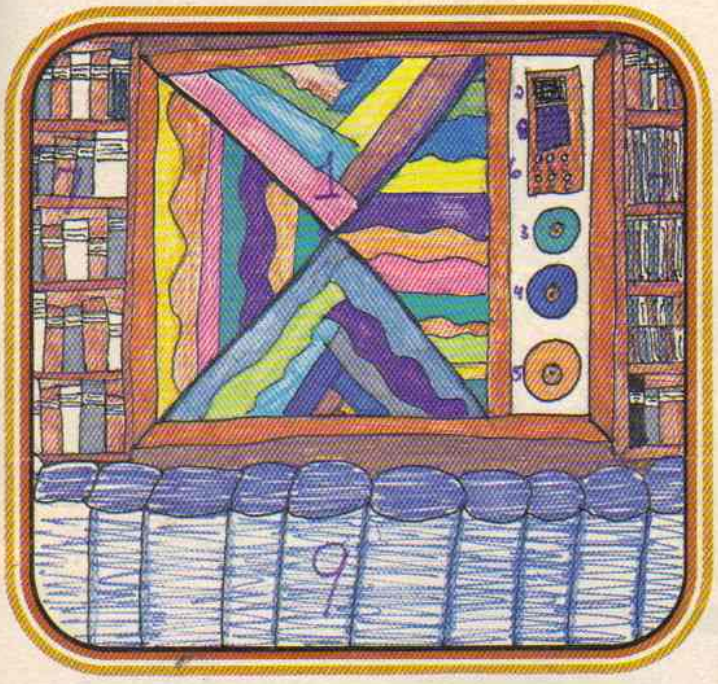
Liz Donovan, age 12, Minneapolis, Minnesota. This tiny record player is smaller than a pencil. It has a TV, tape player, calculator, and paper copier.

Paulding, OH; Rosemary Pitkin, New York, NY; Daniel Ris, Moss Point, MS; Sandra York, Mattapoisett, MA.



Brian Yanish, Pittsford, New York. The music of Brian's record player comes out of a "space hole."

Maureen O'Neill, age 11, Youngstown, Ohio. Maureen's record player runs on solar energy.



Scott Thompson, age 13, Bristol, Tennessee. This record player of the future doesn't just play records. It shows TV programs and movies, too.

Timeline

Send Us Your Future Cars!

On page 28 we told you something about the cars of the past and present. What will the car of the future look like? Will it run on batteries or solar power? Will it have three wheels and two seats, like the earliest cars? You tell us. Design your car of the future and write down how it works. Then send your picture to us, with your name, address, and age. Write to:

Timeline: Cars
3-2-1 CONTACT
P.O. Box 599
Ridgefield, NJ 07657

Highlights from Our TV Show

Junkyard Jalopies

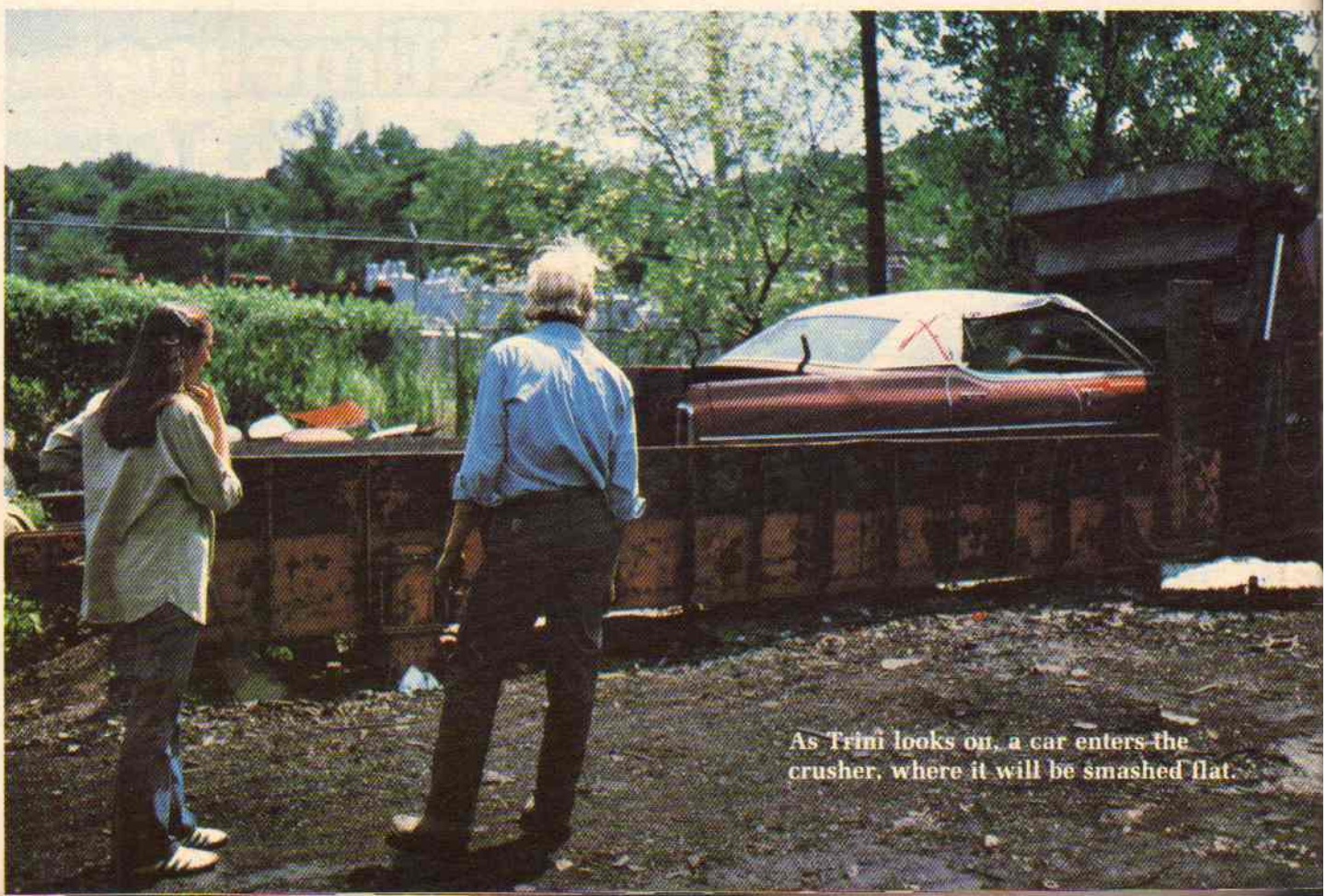
Have you ever seen a rusty old car lying on the side of the road? You may have thought it was just a piece of junk. But that's not really true. If it gets to the right place, that beat-up old jalopy can be recycled. Nearly everything in it can be used again to make new toasters or train sets . . . or even new cars!

The first stop for an old car is the auto junkyard. Each year more than seven *million* cars end up there. To find out exactly what happens to them, 3-2-1 CONTACT's Trini visited a junkyard in Yonkers, New York.

She found that every car is first taken apart completely. Using a blowtorch, a worker takes off the muffler. With a wrench, he removes the bumper and tires. One after another, the pieces come off. After two hours, there are dozens of car parts lying on the ground. Some of these parts may still work. A junkyard worker checks to see if the motor still runs. If the steering wheel works, it's saved, too.

The usable parts are set aside. All the bumpers are stored in one place. And all the seats are put on another shelf. Soon these parts can be sold. People will buy them to repair their own cars. "A customer can get a windshield here that just fits her own car," says Jim Govoni, the junkyard's manager.

Many working parts go straight from the old car to a customer's car. Jim calls this the *short cycle* of recycling. Even car parts that are in pretty bad shape can be put through the short cycle. "A rusted bumper can be sanded and painted," says Jim. "We even patch rust holes with putty and fi-



As Trini looks on, a car enters the crusher, where it will be smashed flat.

Contact Report

Highlights from Our TV Show

Left: Trini and an auto junkyard worker take a close look at a row of bumpers. Like the car doors in the background, the bumpers are part of the 17 billion pounds of metal that junkyards handle each year.

Below: A worker uses a blowtorch to remove the muffler from a junkyard car.

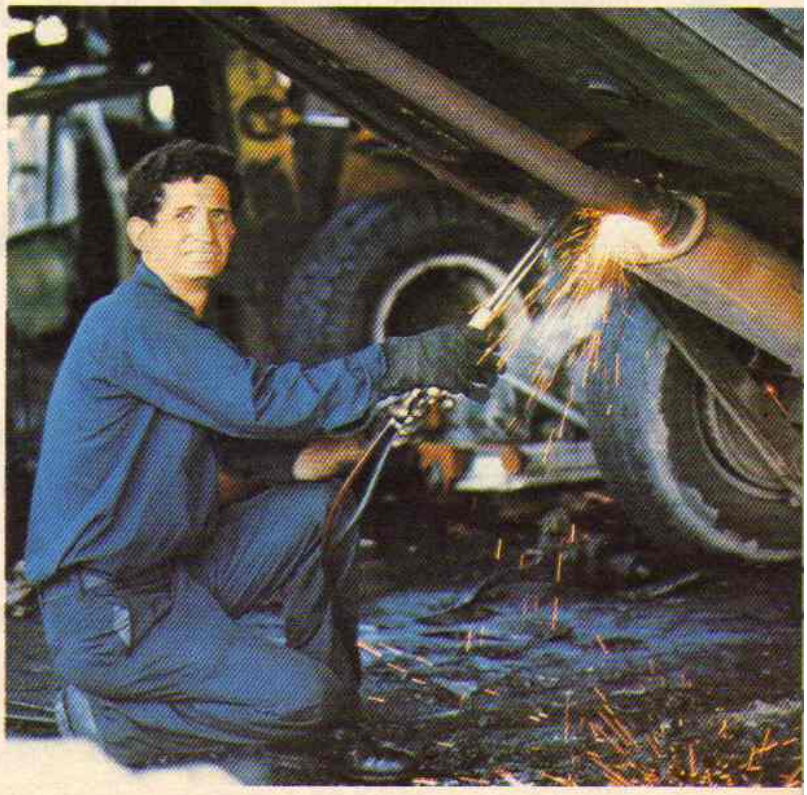
berglass. Then the bumper is ready to be sold."

The rest of the car goes through a different kind of recycling. It's called the *long cycle*. That begins in a big machine called the crusher. A stripped car goes in — c-r-u-n-c-h! The car is pressed flat as a giant tin can. Then several flattened cars are loaded on a truck, like double-decker sandwiches.

For their final trip, these crunched cars are trucked to a *foundry*. That's a shop where metal is melted down. Then the liquid steel is molded into new shapes. It may even be used to make another car.

By the time the junkyard is finished with it, almost all of the car has been reused one way or another. That includes 2,500 pounds of metal, 178 pounds of rubber and 90 pounds of glass. The only part that isn't reused is the 40 pounds of paint and plastic. Not even the crew at the junkyard has figured out a way to use a coat of paint a second time!

—Written by Joanna Martin



Reviews &

Here are some books to read and things to do and see after you finish reading this issue of 3-2-1 CONTACT.

Dinosaur and Meteor Museum

This review was sent in by Stephen Fan of Silver Spring, Maryland.

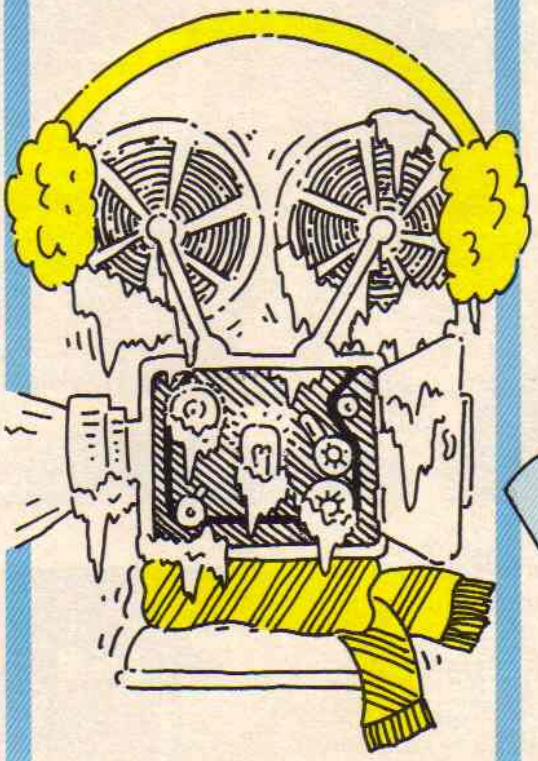
The Natural History Museum at the Smithsonian Institution has many exhibits. There are dinosaurs, fossils, animals, insects and meteors. There is a discovery room and a wonders of nature room.

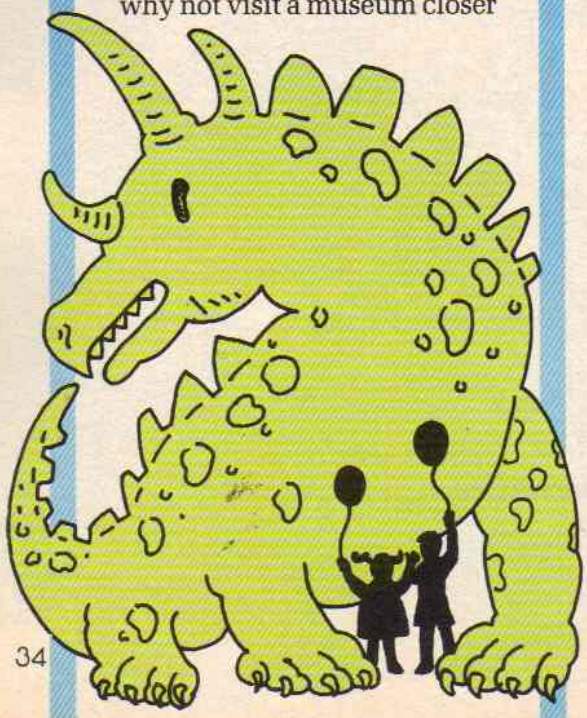
The museum has exhibits on North and South American Indians. It even shows the biggest animal in the world, the blue whale.

There are many things to see and do. Outside the museum there is a marble dinosaur for children to climb on. The museum is fun and interesting.

This museum is in Washington, D.C. If you can't get to it, why not visit a museum closer to home? Then write to us about it. We might feature your review in a future issue of 3-2-1 CONTACT. Send your review to:

Reviews and Previews
3-2-1 CONTACT
P.O. Box 599
Ridgefield, NJ 07657





Winter Movies

If you like pop music and cartoons, you should love the new movie *American Pop*. This animated film tells the story of American music. It was made by Ralph Bakshi, the same man who made the cartoon movie, *Lord of the Rings*, two years ago. Watch for it.

Another movie to look for this winter is called *The Earthling*. It sounds like a sci-fi movie, but it's not. It's the story of a boy and his father trapped together in the woods. It stars Ricky Schroder and William Holden.

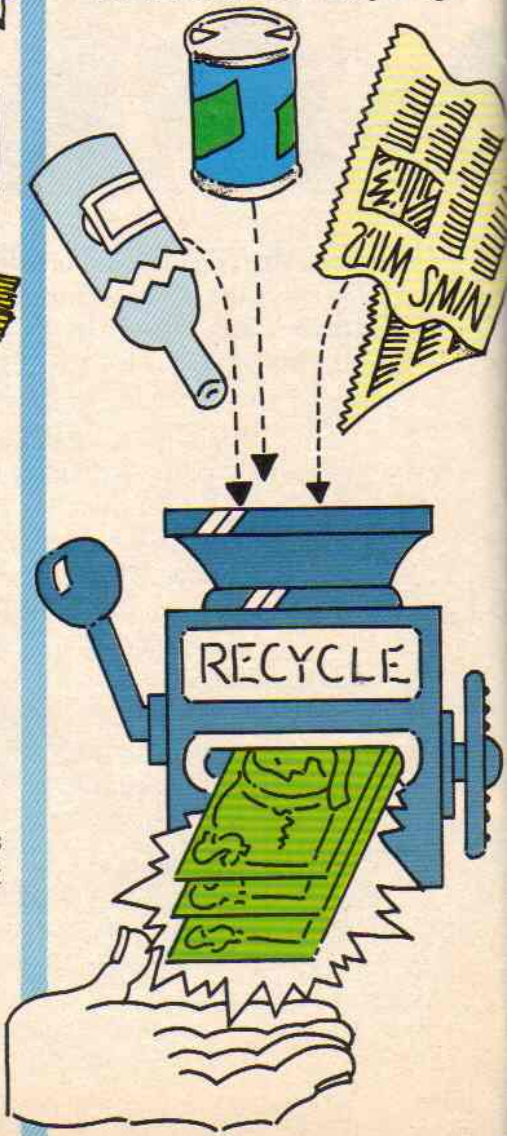
Smashed Trash

In this month's *Contact Report*, you saw how the different parts of a car can be reused. Newspapers, cans and bottles can be recycled, too.

But that's only half the story. You can make money by recycling old junk that you don't want anymore. There are recycling centers in most parts of the country. To find out more, send a postcard with your name and address to:

National Wildlife Federation
1412 16th St., N.W.
Washington, D.C. 20036

Be sure to ask for "Recycling."



Previews

Stormy Weather

The next time you think there's a blizzard raging outside, think again. Not every snowstorm is a blizzard. Here's what the National Weather Service says a real blizzard is:

1. The wind must be blowing at 35 miles (56 km) per hour or more.

2. The snow must be falling or blowing so much that you can only see one quarter mile (.4 km) in front of you. That's about five city blocks.

3. The temperature must be 20°F (-7°C) or less. Brrr!

Four Books Full of Hot Air!

Annie Salzberg, the balloonist on page four, may be young, but ballooning isn't. In fact, people have been going up in balloons for over 200 years. Here are some books about ballooning that'll help you catch up on that high-flying sport. Look for them at the library.

1. Ballooning in the Space Age This is a short history of ballooning, starting with the Montgolfier brothers who built the first hot air balloon. It's written by Lynn Poole and published by McGraw-Hill.

2. August Piccard: Captain of Space, Admiral of the Abyss This book tells the story of a man and his friends who became the first people to successfully fly a balloon 10 miles into the air. It's written by Adelaide Field and published by Houghton Mifflin Co.

3. The Motor Balloon "America" Can six men and a cat break a world ballooning record? Read this book by Edward Mabley and find out. It's published by the Stephen Greene Press.

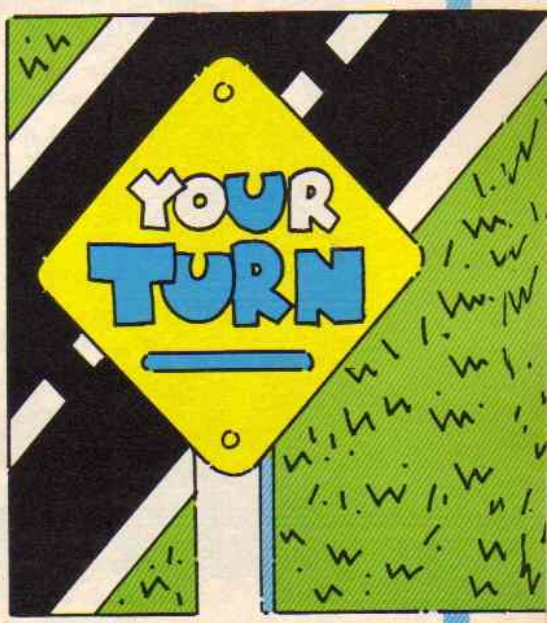
4. Up, Up and Away This story of ballooning takes you from the beginning of flight up to the first non-stop crossing of the Atlantic Ocean in 1978. It's written by Le Roy Hayman and published by Messner.

Two for the Road

In this month's *Timeline*, you found out about the history of cars. Of course, you're pretty familiar with cars already. After all, you probably spend *lots* of time sitting in the back seat of one. Here are two games that will make the time go by a little faster. Try playing them with your family next time you go on a long car trip

1. Find license plates with numbers that read the same way forward and backward. Don't include the letters. For example, LX1221 is a good one. So is 757NJW. The first person to find five of these is the winner.

2. Choose an object such as a sign that's ahead of you on the road. Close your eyes. Say "NOW" when you think your car has reached it. The person who gets closest to the object before the car passes it is the winner.



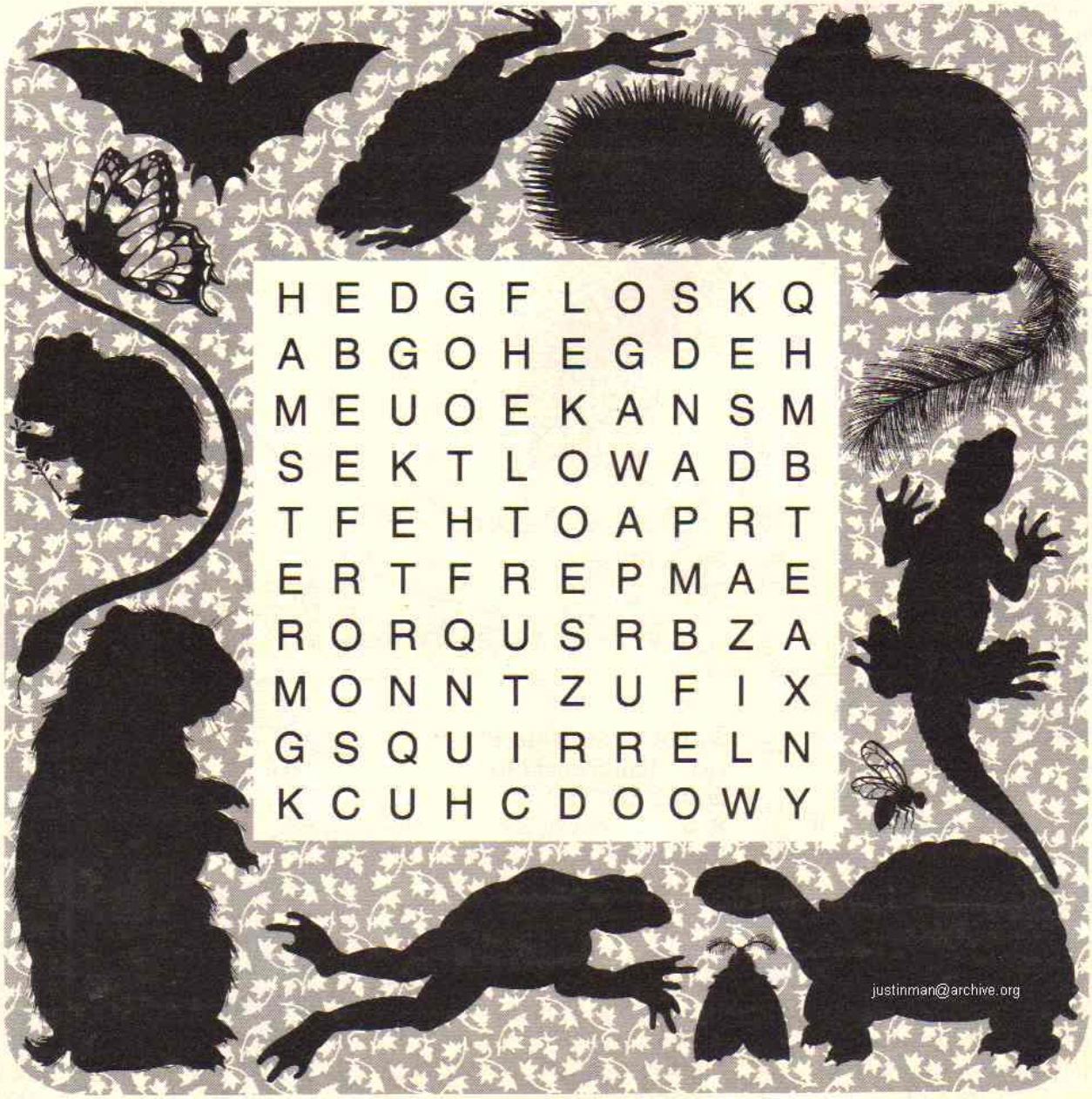
Hibernation Hunt

Hibernation is a way animals have of surviving the long, cold winter. During hibernation, an animal's body temperature drops and its heartbeat slows down to save energy. The animal sleeps through the winter. Some animals, like the grizzly bear, appear to hibernate but really don't. Their temperatures and heartbeats drop only a little and they sleep for just a few days at a time.

Listed here are the names of 13 hibernating animals. They are hidden across, up and down, and diagonally. Some of them are backwards. Happy hunting!

Word List

BAT
BEE
BUTTERFLY
FROG
HAMSTER
HEDGEHOG
LIZARD
MOTH
SNAKE
SQUIRREL
TOAD
TURTLE
WOODCHUCK



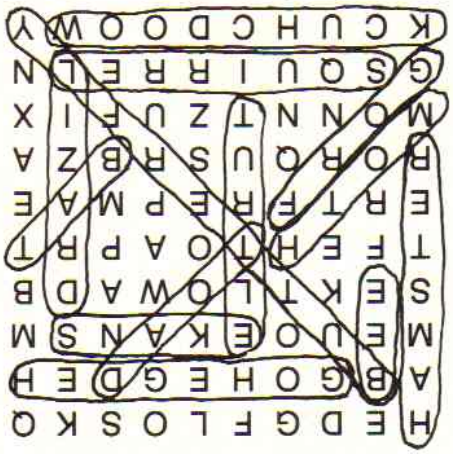
Answer on page 37

Did It!

Thank You!

Thanks to the children and counselors at the Flushing and McBurney YMCAs for their help in reviewing stories.

Word Hunt (page 36)



Next Month!

Here's a sample of what you'll find in the next issue of 3-2-1 CONTACT:

Peculiar Pets
Meet a girl who raises and studies bats.

Dracula
The truth behind the famous legend.

Space Suits
How men and women dress for life in space.

3-2-1 Contest!
Win a CONTACT T-shirt.

Plus Factoids, Earth Days, Timeline and Much More!

Credits

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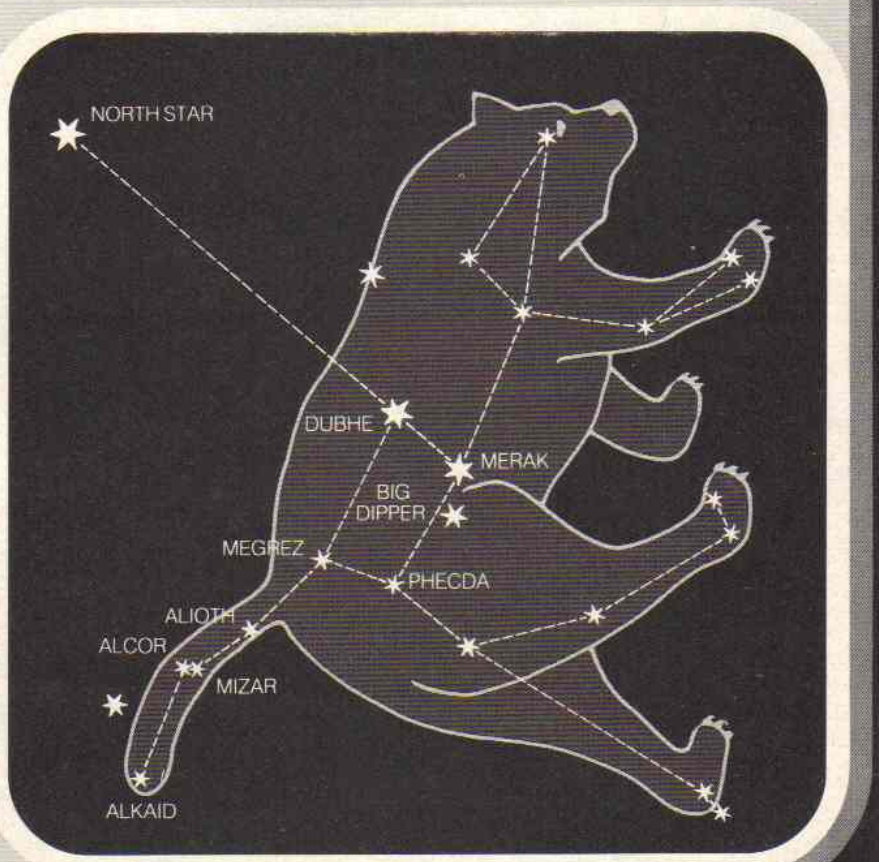
Skyfacts: The Big Dipper

Each month CONTACT will bring you another SKYWATCH. Clip these pages and save them in a notebook. Soon you will have your own guide to outer space.

Skywatch

- Even though the Big Dipper can be seen all year round, its position in the sky changes. In winter, it is to the right of the Little Dipper and its handle points down. In summer, it is on the opposite side and its handle points up.
- The stars of the Big Dipper are Alioth, Alkaid, Dubhe, Megrez, Merak, Mizar/Alcor and Phecda.
- Dubhe and Merak, known as the *Pointers*, are the brightest stars in the Big Dipper.
- The middle star in the Dipper's handle is really two twin stars, Mizar and Alcor. Long ago, they were used to test eyesight. If you could spot Alcor, which is very dim, your eyesight was considered good.
- You can use the Pointers to find the North Star. Follow the Pointers in a straight line across the sky. The next bright star you see is Polaris—the North Star.
- **Star Patterns** When you see a constellation, you might think its stars are close together in space. Actually, they are at least several *million* miles apart. They just look close together from where you are standing on Earth. The stars in a constellation are always moving. This means that over millions of years, as the position of the stars in the sky changes, the way they look to you changes, too. So constellations won't always appear as they do now.

Constant movement of the Dipper's seven stars created the pattern we know so well today. But its stars are still moving—at different speeds and in different directions. Because Earth is so far away from these stars, you cannot see the movement. But 100,000 years from now, there will be no Big Dipper. The position of its seven stars will be completely different.



Right: The Big Dipper is part of the constellation Ursa Major (the Big Bear). The Dipper's handle is the bear's tail. Notice how Dubhe and Merak point towards the North Star in the upper left hand corner.

Can you spot the Big Dipper in the picture above?

Focus on Constellations: The Big Dipper

Look up in the sky at night. If it's clear, you can see hundreds of stars. Can you see a bear, a hunter or a dragon? No? That's not surprising. But long ago, people imagined that the stars formed all sorts of pictures of animals, people and strange creatures in the sky. These imaginary star pictures are called *constellations.*

The Big Dipper is one of the easiest star pictures to spot. It is part of the constellation *Ursa Major*, the Big Bear. Unlike many other constellations, Ursa Major can be seen all year round. And the seven stars in it that make up the Big Dipper include some of the brightest ones in the sky. If you look in the northern sky, you can pick out the bright stars of the Dipper. Four stars form its bowl and three more form its slightly curved handle.

(continued on page 39)